

DECEMBER, 1961



AMATEUR RADIO
AMATEUR RADIO
AMATEUR RADIO
AMATEUR RADIO

RADIO
RADIO
RADIO
RADIO
RADIO
RADIO
RADIO



Townsville Amateur Radio Club's display at the Townsville Trades and Industries Fair, 28th, 29th and 30th September, 1961. (Left: Mr. Brian Harper, Chairman of Trades Fair Committee; right: Mr. Mai Lappin, President Townsville Jaycees; seated: Mr. Bert Boekholt, VK4LB.) Story on page 25.



AMATEUR RADIO

"HAM" RADIO SUPPLIERS

(KEN MILLBOURN, PROP.)

5A MELVILLE STREET, HAWTHORN, VICTORIA

North Balwyn Tram Passes Corner. All parcels sent ordinary post unless otherwise stated. Phone 86-6465

Money Orders and Postal Notes payable North Hawthorn P.O. Packing Charge on all goods over 10 lbs. in weight, 5/- extra.

SCR522 TRANSCEIVERS

Clean condition. Complete with valves. 5/- handling charge ... **£5**
Modified Units, complete with 832s. Few only left at ... **£7 1/2**
Receivers only, incomplete, but ideal for wrecking. To clear ... **19/6**

NEW TAPE DECKS

"Collaro" Studio Type, Model BM-2.
Three Speed. Price **£31/8/4**.
Collaro "Studio" Stereo Tape Decks.
Price **£37/5/-**.

VARIABLE CONDENSERS

(Ceramic)

Small screwdriver adjust, 80 pF., 7/6 each, or three for **£1**.
Split stator two gang, 60 pF. per sec., medium size, 15/- ea.
Trimmers, Ducon, 4-30 pF., 3/6 ea.
Phillips air trimmers, 3-30 pF., 3/- ea.
Compression trimmers, c.t. 3-55, 1/- ea.

TECH MULTIMETER



300 mA. movement.
AC and DC voltages:
0-10, 0-50, 0-250, 0-500,
0-1000V.
Current ranges (mA.)
0-1, 0-10, 0-500 mA.
Ohms range: 0-100,000
ohms.
Size: 3 1/2 x 2 1/2 x 1 1/2
inches.
Complete with leads.

Price only **£2/17/8**, post paid.

CO-AXIAL CABLE

100 ohm co-ax. cable, 3/8" diam., 2/- yd.
98 ohm co-ax. cable, 3/8" diam., in 100
yard rolls **£5**, or 1/3 yard.
72 ohm PT29M, single strand, 3/8" diam.
2/- yard.
50 ohm co-ax. cable, 1/2" diam., 2/- yard
or in 100 yd. rolls **£8/15/0**.

CONDENSERS

Supersal Paper Type:

0.022 µF. 600v. 0.0033 µF. 600v.
0.047 µF. 1000v. 0.015 µF. 400v.
0.0047 µF. 400v. 0.001 µF. 1000v.

Metalpak Electrolytic Type:

25 µF. 25v.d.c.w. 2 µF. 150v.d.c.w.
2 µF. 200v.d.c.w. 2 µF. 250v.d.c.w.
and others.

All **6d.** each

FERROCART VACUUM TUBE VOLTMEETER

V.T.V.M. ... **£19/17/6** inc. tax
H.V. Probe ... **£3/5/0** inc. tax
R.F. Probe ... **£2/10/0** inc. tax

VALVES-NEW AND USED

1A3	2/6 10 a £1	6S57	7/6 3 a £1
1A7GT	7/6 3 a £1	6V4	11/4
1C7	3/- 7 a £1	6X5	10/-
1D5GT	5/- 5 a £1	7A8	2/- 11 a £1
1D8	7/6 3 a £1	7B8	7/6
1H5	5/- 5 a £1	7C5	5/- 5 a £1
1H6	5/- 5 a £1	7C7	2/- 12 a £1
1K4	5/- 5 a £1	7W7	2/6 10 a £1
1K5	5/- 5 a £1	7E6	3/6 7 a £1
1K7	5/- 5 a £1	12A6	4/- 6 a £1
1N5	5/- 5 a £1	12SA7GT	10/-
1P5	2/- 10 a £1	12AH7	5/- 5 a £1
1Q5	5/- 5 a £1	12C8	5/-
1S5	10/-	12J5	5/- 5 a £1
1T4	5/-	12K5	5/- 5 a £1
2A3	7/6	12SF7	5/- 5 a £1
2A5	7/6	12SG7	5/- 5 a £1
2A6	7/6	12SK7	5/- 5 a £1
2D2	15/-	12SL7	7/6 3 a £1
2X2	5/- 5 a £1	12SR7	5/- 5 a £1
3A4	10/-	14A7	3/6 7 a £1
3AP1	35/-	25L6	5/-
3BP1	45/-	117Z6	5/- 5 a £1
3Q5	5/- 5 a £1	1625	5/- 5 a £1
3Q4	10/-	1626	5/- 5 a £1
5R4GY	£1	1629	5/- 5 a £1
5V4G	15/-	30	1/3
5Y3GT	13/9	35T	30/-
5Z3	17/6	83	15/-
6A3	7/6 3 a £1	717A	7/6
6A6	7/6	807	7/6 3 a £1
6A7	10/-	898	15/-
6AJ5	7/6 3 a £1	815	15/-
6AG5	5/-	830B	15/-
6AG7	12/6	832A	19/6
6AM5 (EL91)	10/-	866	32/6
6AM6 (EF91)	10/-	954	5/- 5 a £1
6B4	10/-	955	5/- 5 a £1
6B7	10/-	956	5/- 5 a £1
6BE5	12/6	958A	2/6 10 a £1
6C4	5/- 5 a £1	2051	5/-
6C5	5/- 5 a £1	9003	7/6 3 a £1
6C6	5/- 5 a £1	AV11	2/11
6C8	10/-	DL75	2/6 10 a £1
6D6	5/- 5 a £1	EA50	2/- 10 a £1
6E5	5/- 5 a £1	EC91/6A4	10/-
6F5	7/6	EV36	5/- 5 a £1
6F6	12/6	EF39	5/- 5 a £1
6G6	7/6 3 a £1	EF70	5/- 5 a £1
6G8G	17/6	EF72	5/- 5 a £1
6H6 Glass	2/6	EF73	5/- 5 a £1
6H6 Metal	3/6	EX91	5/-
6J6	10/-	QV04/7 15/-	
6K7	5/- 5 a £1	QEQ4/10 15/-	
6K8G	20/-	QEQ06/40	97/6
6L7	5/- 5 a £1	RL18	7/6 3 a £1
6R7	7/6 3 a £1	UL41	7/6 3 a £1
6T7	7/6 3 a £1	VR53	5/- 5 a £1
6Z7	7/6 3 a £1	VR101	5/- 5 a £1
6SA7	10/-	VR102	5/- 5 a £1
6SC7	7/6	VR103	5/- 5 a £1
6SF3	7/6 3 a £1	VR136	2/- 12 a £1
6SF7	7/6 3 a £1	VR150	10/-
6SG2	12/6	VT32	5/-
6SH7	4/- 5 a £1	VT127	4/11 5 a £1
6SK7GT	12/6	VT501	7/6 3 a £1
6SQ7	12/6	Y65	5/-

OVAL SPEAKERS

Oval Type, Well Known Make.

69H 6" x 9" 3.5 ohm voice coil, 37/6
75H 5" x 7" 3.5 ohm voice coil 32/6
5000 and 7000 ohm Trannies to suit, 15/-

BC433-G COMPASS RECEIVERS

Freq. range 200 Kc. to 1750 Kc., 14
valves—6.3 volt series, 6K7, 6J5, etc.,
I.F. freq. 142.5 Kc. Clean condition,
Priced only **£10/0/0**
Flexible cable & control box 30/- extra.

JAPANESE METERS

0-1 mA., 3 1/2" round, MR-65 ... **£1/15/0**

PIEZO CRYSTAL MICROPHONE

Price only **57/6**
Stand to suit 15/- extra.



Model BM3 (illustrated). Response 100 to 2000
c.p.s., fitted with 6 ft. cable and phone plug
with on-off switch. Can be used on stand for
hand use.

COMMAND TRANSMITTERS

3-4 Mc. range ... **£7**
7-9 Mc. ... **£6**

OA79 and OA81 DIODES

Well known make. Brand New.

To Clear—2/6 each

LEADER LSG10 SIGNAL GEN.



Freq. range (six
bands): 120 Kc. to
330 Mc. on funda-
mental, 120 to 260
Mc. on harmonics.
R.F. output: over
100,000 microvolts.
Mod. freq. approx.
400 c.p.s. H.F. out-
put: 2 to 3v. A.F.
output: approx. 4
v. Tubes: 12BH7,
6AR5. Power sup-
ply ac. 20/00 c.p.s.
115 or 230v. Size: 6 1/2 in. x 10 in. x 4 1/2 in.
Weight: 6 lb.

Price **£13/17/6** inc. tax.

POWER TRANSFORMERS

410 volts aside, 80 mA., 12.8v. at 1.25a.,
5v. at 2a. 46/-.

STEP-DOWN TRANSFORMERS

230 volts to 110 volts, 1kw., **£16/0/0**.
230 volts to 110 volts, 500w., **£6/10/0**.
In case.

5.5 Mc. VIDEO COILS

Contains slug-tuned coil former,
6d. each.

TRANSISTOR POWER SUPPLIES

A. & R. Types PS21 and PS25.
Prices on Application.

AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

EDITOR:

K. M. COCKING, VK3ZFQ.

PUBLICATIONS COMMITTEE:

G. W. BATY, VK3AOM.
S. T. CLARK, VK3ASC.
R. S. FISHER, VK3OM.
R. W. HIGGINBOTHAM, VK3RN.
E. C. MANFOLD, VK3EM.
L. T. WHITE, VK3ZEW (Cartoons)

ADVERTISING REPRESENTATIVE:

C/o P.O. Box 36, East Melbourne,
C.2, Vic.

PRINTERS:

"RICHMOND CHRONICLE,"
Shakespeare St., Richmond, E.1.
Telephone: 42-2419.

MSS. and Magazine Correspondence

should be forwarded to the Editor,
P.O. BOX 36,
EAST MELBOURNE, C.2, VIC.,
on or before the 8th of each month.

Subscription rate, in Australia and
Overseas, is 24/- per annum, in
advance (post paid).

Wireless Institute of Australia
(Victorian Division) Rooms' Phone
Number is 67-3084 (temporary), 10
a.m. to 4 p.m. only.

WI BROADCASTS

All Amateurs are urged to keep these
frequencies clear during, and for a period
of 15 minutes after, the official Broadcasts.

VK3WI: Sundays, 1100 hours EST, simultane-
ously on 3075 Kc., 7146 Kc., and 1450
Mc. Intrastrate call-backs taken on 7030
Kc.

VK3WI: Sundays, 1030 hours EST, simultane-
ously on 3075 and 7146 Kc., 51616 and
14535 Mc. Intrastrate hook-ups taken on
7135 Kc. Individual frequency checks
of Amateur Stations given when VK3WI
is on the air.

VK4WE: Sundays, 0900 hours EST, simultane-
ously on 7146 Kc. and 14343 Mc.
Intrastrate hook-ups taken on 7105 Kc.

VK3WI: Sundays, 0500 hours CAT, on 7146
Kc. Intrastrate hook-ups taken on 7135
Kc. Frequency checks given when VK-
3WI is on the air and also by VK3MD
by arrangement.

VK3WI: Sundays at 0830 hours WAST, on
7146 Kc. Intrastrate hook-ups taken on
7065 Kc.

VK3WI: Sundays at 1600 hours EST, on 7146
Kc. and 3075 Kc. Intrastrate hook-ups
taken on 7135 Kc.

Published by the Wireless Institute of Australia, Victorian Division,
Reg. Office: 62a Franklin Street, Melbourne.

Temporary Office: 262 Queen Street, Melbourne. Phone 67-3084.

Postal Address: P.O. Box 36, East Melbourne, C.2, Vic.

EDITORIAL



THE CLOSE OF 1961

December is with us again and the holiday season approaches when most of us turn to the outdoors, to participate in active sport—those of us who feel young enough; to perhaps finish that job around the house which we kept putting off; to go motoring in search of places we have never been before; or to just take this golden opportunity to take a good rest from the pressure of the year's work in defence of a livelihood. Whatever you might be doing, wherever you might be going, we at Headquarters take this opportunity of wishing you all a very Happy Christmas.

We suggest leaving Amateur Radio alone for a week or two to take advantage of a short time of enjoying other things. There is nothing like shaking off the shackles of things-we-do-off-and-on most of the year to enjoy a complete change of scenery and activity.

1961 has seen a possible culmination of the W.I.A.'s effort on behalf of the Amateur Service to protect the Amateur band frequency allocations. The November issue of "Amateur Radio" carried a brief report about the Government's acceptance of the recommendations presented to it by the Radio Frequency Allocation Review Committee—a committee set up in 1960 by Postmaster-General C. W. Davidson, O.B.E., representing the major frequency users. The task of this committee was to review the allocation of frequencies to all Australian users in the light of the proposed Geneva Frequency Table, 1959, with a view to rationalising the use of the frequency spectrum by the various Australian transmitting services.

The recommendations of the R.F. A.R.C. include some sweeping changes which in some instances will be costly. The committee also provided 13 television channels for the future requirements of the Australian Television Service. The Amateur Service

came under constant review because of its allocations throughout the spectrum. A completely unbiased committee working in the national interest looked very closely at Australian Services before it made recommendations and what finally was submitted to the Government completed a year's work by a team of representatives qualified to see that justice was done in allocating these frequencies from one end of the spectrum to the other.

The Australian Amateur Service lost a few kilocycles in some parts of the spectrum and gained some in others. It came out with a better status as a recognised Service. It came out with some bands on a shared basis secondary to other services, but at least it maintained its bands. With other services it came out with a recommendation which will protect its operators who operate in areas where t.v. reception is of a low signal strength. To sum the position up in a few words—it came out of it very well indeed.

From now on it's up to the Amateur himself. Use the bands! They are yours to use! If you don't use them some other service will rightly claim them. This committee made it quite clear that no service—and we repeat, no service—will hold frequencies in the frequency spectrum if they don't use them. That doesn't mean that we have to be filling the bands allocated to us for 24 hours of the day—other services don't do that. But it does mean that we must regularly operate within our bands to justify their allocation.

So take that few days off during Christmas and forget about Amateur Radio. Take a breath of fresh air and commence next year with a new purpose, to come on the air and use the allocation that has been held for you by dint of hard work with a purpose.

HAPPY CHRISTMAS!

FEDERAL EXECUTIVE.

THE CONTENTS

"The Beer Bottle Vertical"	3	Correspondence	14
Getting to Know the Oscilloscope	5	DX	13
W.I.A. Exhibit at Hobart	7	Notes	21
Remembrance Day Contest, 1961, Results	8	Sideband	19
National Field Day Contest, 1962, Rules	11	SWL	20
		VHF	17
		Index to Volume 29—1961	28

PHILIPS



TRANSMITTING AND RECTIFYING TUBES FOR MOBILE EQUIPMENT

The necessity of telecommunication equipment for sea and air transport is obvious. In this field, telecommunication equipment is often obligatory. In many other fields, however, a need for communication is equally felt, but the bulk and cost of transceivers of usual design has long been prohibitive. Faced with this problem, equipment designers and tube and component manufacturers, working in close co-operation, have gradually developed mobile transmitting equipment that successfully combines small dimensions, low cost, ease of operation, high and dependable performance. As a result, mobile telecommunication equipment is being used on an ever-increasing scale in numerous fields, as, e.g.:

- coasters.
- motor launches of shipping agencies, ships' chandlers, contractors of harbour works.
- small fishing boats.
- tugs (e.g., for direct communication with their tow).
- seagoing yachts and other small maritime craft.
- fireguard for contact with central office.
- taxi cabs for contact with the central point.
- doctors' cars for contact with their base.
- building firms for contact between remote or not easily accessible spots.
- public utility firms for contact with their outside personnel.
- service firms for contact with their personnel on vehicles.
- lonely farms in sparsely populated areas.
- airport vehicles.

Transmitting tubes

PREFERRED TYPES

Further additions to the range of "quick-heating" tubes will be announced shortly.

TYPE OF TUBE	QOE2/5 Double Tetrode (60239)	QOE4/5 Double Tetrode	QOE8/12 Double Tetrode (6350)	QOE13/14† Double Tetrode (7083)	QOE14/15 Double Tetrode (6355)	QOE13/20 Double Tetrode (6352)	QOE14/40 Double Tetrode (6146)	QOE15/35‡ Double Tetrode (6042)	QOE16/40 Double Tetrode (6394)	QOE17/50 Double Tetrode (4 x 150A)	QOE18/200 Tetrode	QOE19/100 Pentode (6092)	QOE20/300 Pentode (5660)	QOE21/500 Pentode (6015)	QOE22/500 Pentode (6015)	QOE23/300 Pentode (6015)
(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)	(W)
2 Mc/s	8.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195	200	132	390	375	390	500
20 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195	200	132	390	375	390	500
30 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195	200	132	390	375	390	500
60 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195		132	390	375	390	500
100 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195			390	375	390	480
120 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195			390	375	390	475
150 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	195			390	360	390	465
200 Mc/s	5.8 7.2*	7.0 8.0*	14.5 18.5*	14.5 18.5*	28.6 35.0*	48 52	52 69*	52 69*	90	185			197	225		445
300 Mc/s	5.8 7.2*	7.0 8.0*			8.5 34.5				75	170						400
430 Mc/s	5.8 7.2*	7.0 8.0*			23				66	155						350
500 Mc/s	5.8 7.2*	7.0 8.0*			22				60	140						325
600 Mc/s		7.0 8.0*			29											290
800 Mc/s		7.0 8.0*														180
900 Mc/s		7.0 8.0*														

The

Miniwatt

ELECTRONICS DIVISION OF
PHILIPS ELECTRICAL INDUSTRIES PTY. LIMITED
SYDNEY • MELBOURNE • BRISBANE • ADELAIDE • PERTH • HOBART • NEWCASTLE • CANBERRA • WOLLONGONG

* Intermittent. † "Quick-heating" version of type QOE13/12 (6360). ‡ "Quick-heating" version of type QOE15/40 (6146).

"THE BEER BOTTLE VERTICAL"

K. C. SEDDON, VK3ACS, and H. L. HEPBURN, VK3AFQ

READERS may be interested in an antenna used with excellent results by the authors during the 1961 National Field Day when they formed one of the teams operating under the call sign of VK3APC/P—The Moorabbin and District Radio Club.

No originality is claimed for it, but we felt that its construction (and perhaps other possible new developments from it) was unusual enough to warrant a mention.

The antenna is a vertical half-wave dipole fed at one end with co-axial cable. On the National Field Day it was used in conjunction with two ended long wires. One was 240 ft. long and pointed NE/SW, whilst the other was 180 ft. long and pointed NW/SE. As they were fairly directional on 14 Mc. to VK2/VK4 and VK6/VK5, the need was soon felt for an antenna which would enable the band to be monitored in all directions. Once a "new" station was heard and identified, the idea was to use the appropriate long wire to obtain a QSO.

However, as it turned out, the vertical gave us as good results on 14 Mc. as either long wire and saw a great deal of use. At the end of the first period of the Contest, nearly two hours were spent in QSO with various Ws who were giving SE-8 reports from the 25w. rig.

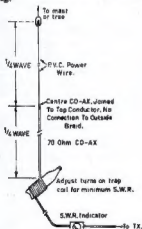


Fig. 1: General arrangement of vertical antenna.

The sketch shows the general set up. A piece of p.v.c. covered power wiring, a quarter wavelength long on 14 Mc., and fitted at one end with an insulator, was soldered to the centre conductor of a long piece of 70 ohm co-axial cable. The end of the co-ax had been stripped of outer covering and insulation for about 1" back from the end.

In our case, the junction was made mechanically secure by threading both co-ax and wire through the mounting

● An interesting practical article written by members of a VK3 team in the last National Field Day Contest. The authors developed a new idea for horizontal aerials which as far as known is presented for the first time.

holes of a small stand-off insulator, and soldering the two wires at the tag on top of the stand-off. Any suitable method of strengthening may be used (even a "splint" of dry timber taped on), but it is most important that some form of support be used as otherwise the whole weight of the bottom half of the finished antenna would be placed on the soldered joint.

Next, a 12" length of insulation tape was doubled round the outside of the co-ax a quarter wavelength along from the centre joint. This left a 6" "tab" sticking out from the co-ax. This "tab" was placed lengthwise along an empty beer bottle and eight turns of the co-ax wound onto the bottle over it, so securing the first turn. The last turn was temporarily taped into place round the bottle.

Next, the whole boiling was hauled up from a convenient (?) tree branch until the bottle and coil were about three feet off the ground. (Later on it went a bit higher, but for the moment leave it near the ground.)

The far end of the co-ax was then coupled to the transmitter via a s.w.r. indicator, and the number of turns on the bottle adjusted to give minimum s.w.r. In our case, the reflected power showed less than a division on a meter having a forward power indication of 50 divisions, so that the indicated s.w.r. was at least 1.04/1, and possibly a bit better. We found that we had to make three additions to the number of turns before this state of affairs prevailed, and we finished up with 12 turns. The final turn was then securely taped into place and the antenna pulled up as far as it would go. The bottle finished up about 8-9 feet off the deck.

We could not measure any appreciable variation in the s.w.r. over the 14.0-14.2 Mc. segment of the band we were using.

Because the coil acts as a self resonant trap at the frequency in use, the braid of the co-ax between coil and transmitter is isolated from r.f., whilst the braiding of the quarter wave between coil and feed points effectively becomes the second half of a dipole. Thus the whole thing acts as a conventional centre fed vertical dipole, with a feed impedance in the region of 70 ohms.

The co-ax from transmitter to coil can be of any length you please as it is acting as a non-resonant feeder.

Coil winding data may vary somewhat with different formers. The num-

ber of turns we used will not be exact in all cases, but will form a good starting point if your former is between 3 and 3½ inches outside diameter. You simply add on turns or take them off until you obtain the lowest s.w.r.

Other frequencies can be tackled in the same fashion. Lower frequencies would need more turns (and a much higher tree!), whilst higher frequencies would need less turns. The important thing is to adjust the number of turns of your co-ax on your bottle for the minimum s.w.r.

Whilst it has not yet been tried, there seems no reason why the antenna could not be used in a horizontal position. The feed point being physically at one end, but still electrically in the centre, would then be very useful in the typical suburban lot where centre feeding of dipoles can present a problem if the "shack" is in the house. As the resonant trap has a high L/C ratio, it is possible that it will be effective over the greater part of the band for which it is designed. In addition, the use of co-ax as one active element must tend to decrease the Q of the antenna and so make it less critical to frequency change. This latter possibility could be enhanced and symmetry improved by using a second piece of co-ax with inner and outer conductors in parallel in place of the power wire.

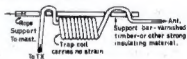


Fig. 2: Suggested end support arrangement.

For a horizontal model, there would be a couple of points to be watched. The need to remove strain from the centre junction and the coil would become extremely important, so that provision of low loss "splints" across them would be obligatory. The second sketch gives suggested constructional details.



Fig. 3: Suggested centre support arrangement.

When one of the authors (VK3AFQ) gets round to putting up a 40 ft. pole, it is intended to carry out measurements on a 60 metre horizontal model, so that there may be more on this subject anon.

As a second development, there is the delightful possibility that the coil trap could be air-cored rather than being wound on an empty beer bottle. This one we will leave to the theoreticians as the practical prospect has little attraction.



WARBURTON FRANKI

BIGGEST RANGE, BEST VALUES
in RADIO & TV PARTS

BARGAIN IMPORTED RECORD PLAYERS

Famous DUAL-automatic type, superseded model 1004/T12. Brand new in sealed cartons.

MUST CLEAR

£15-15-0 + tax

Packaged weight—11 lbs.

Q+ BOOSTER IMPROVES T.V. RECEPTION IN FRINGE AREAS

Guaranteed results. Easy to fit at rear of set. Leaflets available.

£9/15/- + 25% tax Please add postage.
Weight 5 lbs.

SPEAKERS 12 inch. 15 ohm Voice Coil.

15 watts input. Frequency range, 50 to 8,500 c.p.s.
Package weight—7 lbs.

£3/3/10 + 25% tax

POWER TRANSFORMERS

A & R SUPERSEDED NUMBERS

No.	mA.	Voltage	Aside	Filaments	
PT1788	125	325	5v. 2a.	6.3v. 2a.	55/- + tax
PT1789	125	350	5v. 2a.	6.3v. 2a.	57/6 + tax
PT1778	175	350	5v. 3a.	6.3v. 3a.	78/6 + tax
PT1783	180	410	5v. 3a.	6.3v. 4a. c.t.	100/- + tax
PT1782	200	450	5v. 3a.	6.3v. 3a.	106/- + tax
PT1781	200	400	5v. 3a.	6.3v. 3a. c.t.	95/- + tax

Any of above Transformers, 5/6 Pack and Post.

10 WATT W.W. RESISTORS

	1 to 10 ohms	2/8 each	
5001 to 7500 ohms	2/8	"	ALL VALUES AVAILABLE
7501 to 10K	3/4	"	Plus tax 25%
10001 to 12K	4/8	"	
12001 to 15K	5/8	"	Plus Pack and Post, 1/- doz.
15001 to 20K	6/8	"	
20001 to 30K	10/-	"	

OUTPUT TRANSFORMERS

A & R SUPERSEDED NUMBERS

OT921/8—20 watt rating.	OT931/8—20 watt rating.
Primary, 6,800 ohm P.P.	Primary, 4,500 ohm P.P.
Secondary, 2 or 8 ohms.	Secondary, 2 or 8 ohms.

£5/15/0 plus tax.

£5/15/0 plus tax.

Any of the above Transformers, Pack and Post 5/6.

RESISTORS—CARBON

IN LOTS OF 100
MIXED VALUES

1w. $\pm 10\%$ 60/- + 25% tax. 1/2w. $\pm 10\%$ 50/- + 25% tax.

Also available . . .

IMPORTED CRACKED CARBON RESISTORS

1/2w. 13/- doz. + 25% tax. 1w. 10/- doz. + 25% tax.
1/2w. 8/- doz. + 25% tax. 1/2w. 13/- doz. + 25% tax.

IMPORTED REACTION CONDENSERS

Imported Moulded Alligator Clips, red and black	100 pF. 6/- + 25% tax.
Imported Crystal Earpieces	2/4 pair + 12 1/2 tax
Imported Front Loading Bezels—red only	3/8 each + 25% tax
Imported Miniature Phone Plugs and Jacks	2/8 each S.T. exempt
Imported Power Diodes HR25, 500 mA. at 500 p.d.v.	2/5 pair + 12 1/2 tax
	16/- pair + 25% tax

Locally made **CRYSTAL TURN-OVER PICK-UP CARTRIDGES**
complete with 2 Sapphire Stylus. £12/6 plus 25% sales tax.
Plus Pack and Post 1/- any of the above.

METERS

Imported Meter Movements.

4" Square Black Case.

First Class Instruments.

F.S.D. 50 microamps. 87/6

F.S.D. 500 microamps. 79/6

CHASSIS PUNCHES

Hammer Type

Set of three: 5/8", 3/4", 1-3/16".

£2/19/6

Plus Pack and Post 2/6.

WIRE P.V.C. HOOK-UP, 7/010.

Red — Green — Slate — Yellow.

15/- 100 yd. reel plus 25% tax.

Pack and Post 2/-.

6-CORE CABLE

Each core 7/010 P.V.C. (Shielded and P.V.C. covered overall.)

2/8 yd. plus 25% tax.

Pack and Post 9d. yd. or 4/6 doz.

OPEN SAT.
MORNINGS



WARBURTON FRANKI

359 LONSDALE ST., MELBOURNE — MU 8351



TRADE ALSO
SUPPLIED

Please include Postage or Freight with all Orders

GETTING TO KNOW THE OSCILLOSCOPE

PART ONE

J. L. K. MATCHETT,* B.A., B.Sc., B.Ed., VK3TL

WHEN one first examines the control panel of a cathode ray oscilloscope, one is struck with the complexity of the apparatus. It would seem that it may be too complicated an apparatus to explain to pupils even of Matriculation standard. And whilst the writer agrees that there are many components in its circuit, it is not impossible to carry out a number of simple experiments which illustrate the principles behind its rather complex circuitry. Such experiments serve to bring out some of the practical applications of resistors, capacitors, electron emission and so on, which are studied by the pupils. It is the purpose of this demonstration then, to illustrate some of these principles with apparatus easily procurable by the teacher.

Probably the best starting point in understanding the cathode ray tube (which is the most important component of the cathode ray oscilloscope) is the ordinary electric light globe. A current may be passed through it and the pupils told that hot bodies emit negatively charged particles called electrons. In the case of an electric light globe, the electrons simply form a space charge about the hot filament.

The next step is to revise the pupils' knowledge of the wireless valve. Point out the function of the plate, cathode, filament and grid. Obtain a few old radio valves from the local radio repair shop. (He will be only too glad to get rid of them.) Wrap some clothing around each one in turn and gently squeeze in a vice. In this way only the glass envelope will be smashed and not the valve electrodes.

The directly-heated cathode type (ordinary battery type), may be compared with its indirectly heated equivalent (a.c. mains type), with its separate cathode coated with material which will readily emit electrons when hot. Some c.r.o.s. have their cathode connected to their filament, i.e. heaters, others not. Valve types should be examined and the teacher could demonstrate that the hot filament is emitting electrons by means of a simple electro-

scope. Once the principles of the triode are understood, it is time to examine the c.r. tube itself, and the similarity to the radio valve pointed out.

Concentrate upon the cathode, heater, grid and accelerating anode electrode. Fig. 1 shows a simplified drawing of the c.r. tube.

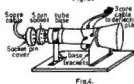
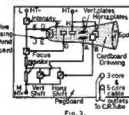
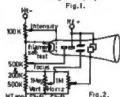
In addition, the electrodes are connected to pins which protrude from the base of the c.r. tube as in the case of a radio valve. Not all c.r. tubes are as simple as this, but they all have an electron gun, that is, a part that shoots electrons toward the screen.

A simple circuit for the c.r. tube may now be examined. A circuit show-

ing values which ensure proper shift of the electron beam, focus, etc., are only found by experiment, but the writer found the circuit of Fig. 2 suitable for the 905 tube. Undoubtedly it would be quite suitable for many other types.

Most of these components are obtainable from radio odds and ends. All are potentiometers ("pots" as they are called), with the exception of the 200K and 500K fixed resistors.

Note how the grid is made more negative than the filament and also how a voltage (obtained by allowing a current to flow through a resistor) is applied to one of each set of deflecting plates.



The 905 (or 905A or 907, both of which are very similar) is available on the disposals market and is very suitable for classroom demonstration. This tube lacks the usual graphite lining within the tube which serves to facilitate the return of electrons to high tension anode. In addition, the connections to the deflection plates are brought out through the glass about half way down the tube, and so an ordinary five-pin valve socket will suffice for the c.r. tube pins. Whilst on the question of sockets, always try to obtain the appropriate socket for the tube you buy.

In order to demonstrate the c.r. tube, the wiring was set out on a piece of masonite peg board enamelled white to

show up the coloured wires. The size of the board was approximately 2 ft x 1 ft 6 in.

A drawing of the c.r. tube was made upon a stiff piece of cardboard and then stuck on to the peg-board as shown in Fig. 3. The wires as shown leading to the piece of cardboard were then taken at the back of the board to the cable outlets. The three-core cable is connected to one of each set of plates and the high tension to each of the remaining plates (Connections A, B and C in Fig. 3). The five-core cable (or one ordinary three-core and one two-core cable) is connected to each of the two heaters, the grid, focusing anode, and accelerating anode. (Connections D, E, F, G and H in Fig. 3.) Fig. 4 drawing shows the connections of each cable to the actual c.r. tube.

The socket connectors of most c.r. tubes differ from each other. In the case of the 905 (or 905A or 907), they are—

- Pin 1—Heater.
- " 2—A1 (focusing anode).
- " 3—A2 (accelerating anode).
- " 4—Grid.
- " 5—Cathode-heater.

Unfortunately socket connections for c.r. tubes are not shown in valve manuals, but some are listed in the A.R.R.L. Handbook which is possessed by almost all Radio Hams and many technicians. This volume also contains details of filament voltage, filament current, anode voltages and grid bias. Amongst the common c.r. tubes available on the disposals market at reasonable prices (averaging about 30/-) are the following: 5BP1, 902, 913, 3AP1 (or 906), VCR 135A, VCR138A, VCR97, 511, 913, CV-112. None of these tubes require high voltages. When buying a c.r. tube avoid buying one which requires magnetic deflection coils. Electro-static deflection tubes have simpler circuitry and illustrate principles more clearly.

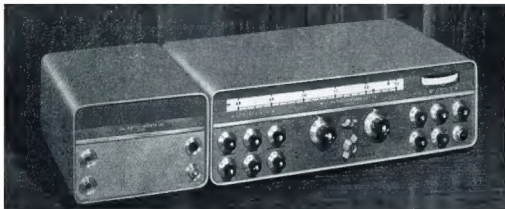
The electric light switch cover afford protection from any contact with the bare radio valve socket and is squeezed over the cable. The three wires of the three-core cable are connected to the deflection plate caps with four insulated plate caps of an 807 transmitting valve type. The actual c.r. tube is mounted upon a heavy baseboard by means of aluminium brackets cut to fit the diameter of the tube. When fitting brackets ensure that rubber padding is used so that the tube will not be scratched. It should be noted that once set up the tube should not suffer any vibration and must not be scratched with metal or the tube may explode. Four other connections are necessary to the peg-board in addition to the two cables. These are firstly two twisted wires which come from a source of filament current. This is usually a 6.3 volts supply but in the case of the 905, a 2.5 volt supply is necessary. A dropping resistor of high wattage rating may be used to drop the voltage across the filaments from 6.3 to 2.5. You will find

(Continued on Page 7)

* 645 Riversdale Rd., Box Hill, Victoria.

The above article is the summary of a demonstration given by the author to Secondary School Science Teachers during the Summer School, January 1959.

THE NEW IDEAS in Communications are born at ... **HALLICRAFTERS**



FPM-200 Transistorised Transmitter-Receiver/Transceiver S.S.B.-C.W.-A.M.

Designed for fixed, portable, or mobile operation, the FPM-200 guarantees the operator top flight performance equal to that provided by the famous SX-101 Mark III/HT-32 combination . . . in a package only 16" long, 5" high, and 11" deep, weighing only 24½ lbs.

This equipment has two separate permeability tuned oscillators for independent frequency control of the receiving and transmitting sections. The flick of a switch enables the operator to select either PTO for single dial control of both transmitting and receiving functions, thus providing the ultimate in operational flexibility without modification or the need for additional plug-in devices.

Transistors are used throughout the entire receiver section, and in all low level transmitter stages up to the driver. This results in a total of only three tubes, the 12BY7 driver, and the two 6164s in the final amplifier stage.

The most advanced concepts in the art of receiver and transmitter design will be yours in the new Hallcrafters FPM-200. Over two years of intensive research and development effort assure the latest and best in up-to-date, advanced circuitry.

FEATURES

- ★ Complete coverage, from the low end of the c.w. portion to the top of the phone portion, of all Amateur bands, 80 through 10 metres.
- ★ Self contained, transistorised 12 volt d.c. power supply.
- ★ Linear dial calibration accurate to 1 Kc.
- ★ 150 watts p.e.p. input on S.S.B.
- ★ All modes of operation, U.S.B., L.S.B., C.W., A.M.
- ★ Performance proven Hallcrafters high freq. crystal filters to ensure maximum unwanted sideband suppression and outstanding receiver selectivity.
- ★ Plug-in modular construction for simplified maintenance and greater reliability.

- ★ Very low current drain from the car battery:—
 Receive only 0.8 to 1.8 amps.
 Standby 2.4 amps.
 S.S.B.—no mod. 10.5 amps.
 S.S.B.—peak out 18 amps.
 A.M. 100% mod. 18 amps.
 C.W. maximum out 23 amps.
 No need for alternators or heavy duty generators.
- ★ Switch on front panel selects tracking or independent frequency control.
- ★ Power supply and heat producing amplifier tubes mounted in air duct, from which heat is exhausted by a transistor powered fan. This compartment is thermally baffled from all other circuitry.

Sole Australian Representative:

W.F.S. ELECTRONIC SUPPLIES CO.

225-7 VICTORIA RD., RYDALMERE, N.S.W. Phone 08-1715

Sole Victorian Agent: ELECTRONIC SERVICES, Douglas St., Noble Park, Vic. Phone 746-8446

Sole South Aust. Agent: TELEVISION & RADIOTRONIC CO., 11a Gays Arcade, Adelaide

Sole Queensland Agent: GENERAL IMPORT DIST., 135 Lutzuw Street, Wellers Hill, Brisbane

W.I.A. EXHIBIT AT HOBART

The Tasmanian Division of the W.I.A. staged an exhibit at a recent Hobbies and Careers Exhibition organised by the Hobart Junior Chamber of Commerce in the City Hall, Hobart, from 8th to 9th September. Being during the school holidays, the exhibition was well attended by both children and adults alike—emphasis seemed to be on careers, other exhibits being provided by

Operation was on 80, 40, 6 and 2 metres under the call of VK7WI/P. V.h.f. only was used throughout the day, both around the town and, using a walkie-talkie on 2 metres, to points around the hall. Mike VK7ZAV did a marathon job through the period and was reinforced by others when possible. Gear on display included QSL cards and certificates, converted and uncon-



the Services, various government departments, plus private enterprise.

We received very good publicity, signed quite a few new members, were featured by the local commercial t.v. station, and had an "interview" recorded, via Amateur Radio, and re-broadcast over a local national radio station.

verted disposal gear, Ross Hull and R.D. Trophies, plus various bits and pieces.

A special QSL card will be issued to all stations contacted.

Pictured is the exhibit and some of the v.h.f. boys, from left: Will VK7ZAG, Mike VK7ZAV, Reg VK7ZAO, and extreme right, Bryan VK7ZBE.

ALWAYS SWITCH TO SAFETY

SAFETY PRECAUTIONS

Even a few hundred volts can cause most unpleasant physiological effects if carelessly handled. The voltages developed in many Amateur stations are capable of causing injury or death. Reasonable precautions should always be taken.

All apparatus and wiring should be so placed and constructed that it is impossible to touch points of high direct-current or radio-frequency potential under normal operating conditions.

The aerial should never be directly connected to the anode coil of the output stage (this is illegal and highly dangerous). Never attempt to change transmitter coils with the power ON.

Use double-pole iron clad switches to ensure complete isolation of all mains transformers. These switches should be clearly marked with ON-OFF positions. Some other person in the house should know where to find the main switch for use in case of emergency.

High wattage bleeder resistances across power supply filter capacitors will prevent many shocks. If it is necessary to touch the transmitter while the power is ON, keep one hand behind your back or in your pocket; never wear headphones while working on a transmitter.

Insulated extension spindles fitted to transmitter tuning controls will eliminate danger from exposed gear screws.

MAKE SURE THAT ALL METAL WORK IS EFFECTIVELY EARTHED

—Reprinted from R.S.G.B. "Bulletin."



APPLYING FOR AN AWARD?

When applying for an Amateur Radio award, whether direct, through the W.I.A., or through an overseas society, always—

1. Write a letter of application for the award.
2. Supply a check list showing the essential details of the cards submitted, viz. Date, time, band, mode.
3. Write your name, address and call sign legibly on each application sheet.
4. When forwarding QSL cards, always enclose international reply coupons or appropriate unused postage stamps for the return mailing cost on your cards.

Your close attention to the above-mentioned points will make the task of the Awards Manager ever so much easier.

—Eric Treblecock, BERS-196.

KNOW THE OSCILLOSCOPE

(Continued from Page 9)

a length of ordinary electric jug element satisfactory. For your calculation, the current through the filament is rated as 2.1 amps. In many cases, the dropping resistor won't be necessary, for some old power transformers with a 2.5 volt heater winding are to be found at a very cheap price since they are no longer used in radio circuits. The remaining two wires are connected one to each of the high tension terminals as shown.

To ensure good connections, two insulated terminals, one red, one black, are fixed on to the peg-board for the h.t. and two cheap green terminals for the filament wires. These terminals are shown on Fig. 3 as points J, K, L and M. The shafts of the four pots were brought out to the front of the peg-board and small square blank scales with pointer knobs fitted. Full use should be made of old radio parts which are available at low cost. Some useless valves are on the disposals market for a few shillings and some of these are very large; thus their parts are very

CHOOSE THE BEST—IT COSTS NO MORE



Resin Core SOLDERS
for reliable connections

O. T. LEMPRIERE & CO. LIMITED
Head Office: 27-41 Bowden Street, Alexandria, N.S.W.
and at Melbourne • Brisbane • Adelaide • Perth

RESULTS OF REMEMBRANCE DAY CONTEST, 1961

OUR congratulations this year go to Western Australia for regaining the Remembrance Day Trophy from the holders for the last two years, Tasmania. We understand that a lot of organising went into contest preparations in W.A., and the results prove that the effort certainly was worth it.

Second place goes to South Australia, followed by Tasmania, New South Wales, Victoria and Queensland, in that order.

An interesting sidelight is that this year VK2 beat VK3 into fourth place. The bands were well populated during the Contest, but it is a pity that some States still have a participation factor of less than 10%. Victoria sent in only 30 logs out of 1,314 licensees, while for instance Western Australia submitted 87 logs out of only 288 licensees.

After all these years it becomes quite obvious that the larger States will never get the required number of log entries to win the Contest. Several suggestions for changes in the rules and in the scoring system have been submitted with this year's logs, and next year we may try something new. The Federal Contest Committee will study the possibilities of any suggestion sent in and will, in due course, submit the most promising to Federal Executive and to the Divisions for consideration. If you have any ideas, let's hear them.

Unfortunately the Contest Committee's lot is not a happy one. In the past we have not passed much comment on the logs received. Due to the large number of logs which, in one way or another, did not comply with the rules, we feel we owe it to the contestants to point out the major mistakes made.

Wherever possible the Committee has corrected the faults, but unfortunately we had to disqualify several logs which, among other things, did not show the time when each contact was made. Apart from those, there were quite a number of logs without the front sheet, some were without the declaration, while others started serial numbers with a number other than "001", claimed wrong points (obviously through reading the scoring table from top to bottom), claimed no points at all, had the times in G.M.T., had the log in order of bands worked or in order of c.w. and phone contacts, instead of in numerical order.

By careful reading of the rules, all these mistakes could have been avoided, saving the contestants points and the F.C.C. a lot of extra work. We are happy to say, however, that the biggest logs without exception were excellently made out and we found hardly any faults in them. We hope that the above remarks will help everybody to send in better logs and obtain bigger scores next year.

Unfortunately, quite a few of the Short Wave Listeners had also trouble with the scoring, nearly half the logs had wrong scores. Many listeners claimed points for both the stations calling and the stations being called. This F.C.C.'s interpretation of Rule 3 (Receiving Section), and its ruling, is that points can only be claimed once for one particular contact, whether or

REMEMBRANCE DAY CONTEST 1961 RESULTS									
State	Total State Score	Aver. Top Six	Licenses	Log Entry	Percentage	State Log Aver.	Total State Points		
New South Wales	23676	940	1372	124	9.04	191	3079		
Victoria	18793	746	1314	80	8.09	210	1776		
Queensland	9094	594	446	48	10.76	189	1573		
South Australia	17357	917	138	78	15.06	222	3529		
Western Australia	10787	546	288	87	30.21	124	3805		
Tasmania	7916	600	148	49	33.11	162	3217		

not both sides of the contact can be heard by the listener.

One other thing we would like to mention. In all States club stations entered the Contest under their own call sign, without showing the call sign of the operator of the station, as required by Rule No. 6. There have been precedents in this in previous Contests and we have therefore accepted these logs this year. However, as it is possible for one operator to submit two logs, one under the club station call sign and another one under his own, the rule regarding substitute operators will be re-worked to make it quite clear that club stations come under this category.

F.C.C. hopes that the above remarks will not be taken as criticism, but rather as what they are intended to be, an attempt to give everybody a chance to submit a bigger and better log for the next Contest.

Once again our congratulations to Western Australia for a very good effort, and we hope that all States will put up a good fight next year in trying to win the trophy from them.

Now here are the results in detail.

STATE TROPHY	
Western Australia	3798 points
HIGHEST STATE LOG AVERAGE	
South Australia	222 points
HIGHEST INDIVIDUAL SCORE	
VK3NO	1389 points
Open— AWARD WINNERS	
VK2AHM—R. J. Whyte	1215 pts.
3ALZ—I. F. Berwick	874 "
4DP—D. M. Portley	919 "
5NO—L. H. Vale	1389 "
6RU—J. E. Rumble	903 "
7MZ—H. Hancock	362 "

Phone—	
VK2AHM—N. A. Hanson	1072 pts.
3ADW—D. A. Wardlaw	839 "
4UX—C. P. Singleton	609 "
5FT—F. K. Tapley	959 "
6KW—R. W. S. Hugo	592 "
7MS—D. M. Slowan	807 "
C.w.—	
VK2QL—F. T. Hine	556 pts.
3XB—I. Stafford	423 "
4XW—G. Harmer	251 "
5MY—H. M. Roberts	457 "
6SM—M. H. Shaw	358 "
7SM—S. G. Moore	446 "
Receiving—	
L2311—R. C. Abernethy	806 pts.
L3076—R. Young	629 "
T. A. Lane (VK4)	363 "
K. A. Wehr (VK5)	1084 "
L6021—P. W. Drew	588 "
R. De Balfour (VK7)	905 "

NEW SOUTH WALES		
Top Six Logs—		
VK2AHM	1215 points	
2AHM	1072 "	
1PM	945 "	
2ASZ	842 "	
2DO	821 "	
2BO	740 "	

Phone—	Cont. Pts.		Cont. Pts.
VK2AHH	373 1072	VK2VO	30 10
1PM	380 945	2GV	29 84
199	199 621	2ACZ	24 84
2ADE	207 609	2AOU	18 62
2VU	199 573	2OD	58 63
2VU	203 529	2RU	12 50
2AP	173 510	2JA	22 48
2VU	169 465	2IV	14 47
2AWZ	182 466	2TP	27 47
1AOP	188 439	2MI	15 44
2AKI	197 439	2VU	12 43
2NB	161 410	2EY	23 43
2YN	134 345	2BK	23 41
3ALV	129 323	2AKV	5 37
2XU	104 214	1ANR	11 39
2AKV	128 260	2LQ	12 35
2CS	113 255	2AZZ	16 34
2AKA	85 247	1BJ	19 31
2BO	77 245	2AJL	7 29
2AF	103 239	2JS	14 29
2BB	108 216	1EM	10 29
2OH	89 215	2AC	14 24
1VP	68 208	2AWT	14 24
2AAX	106 199	2ME	10 22
2XU	73 190	2AW	6 20
2AH	99 188	2ADA	15 18
2ACQ	79 188	2AAH/M	5 18
2AQJ	76 174	2LA	9 18
2AB	46 180	2AGR	7 17
2VU	81 177	2PT	8 17
2ADL	49 150	2GJ	9 17
1KM	75 156	2AAT	10 13
2VU	61 153	2AKX	7 12
2XP	62 140	2AWX	7 12
2BW	83 147	2OZ	9 12
2OE	41 114	2ACS	8 11
2CO	46 101	2VU	7 11
2AFQ	44 89	2WL	6 10
3RK	32 86	2MP	9 10
2VU	19 78	2ADM	9 10
2ACD	34 76	1LM	0 10
1DG	38 74	1KK	Disqualified
2ADM	30 72	2DE	Disqualified

Open—	Cont. Pts.	Cont. Pts.	
VK2AHM	405 1215	VK3QA	70 167
2ASZ	317 942	2FE	38 143
2DO	299 621	1SB	33 86
2VU	287 740	2VU	23 73
2PN	280 715	2AC/A	22 77
2APK	209 673	2CH	17 59
2AGS	200 493	2AUC	20 42
2VU	194 481	2VU	15 40
2ACQ	116 312	2AHA	15 31
2AGR	83 294	2PL	10 18
2VU	107 254	2AVN	7 13
2EU	97 190		

C.W.—	Cont. Pts.	Cont. Pts.	
VK2QL	185 556	VK3KZ	23 50
2EO	112 343	2PK	17 47
2VU	107 343	2IC	10 38
2VU	81 247	2EG	12 35
2CT	82 241	2AFA	9 34
2DI	64 222	2OT	9 26
2EL	59 197	2GW	9 24
2HC	28 83	2OW	8 23
2VU	18 56	2XQ	11 17
2ZO	20 52	2ANU	Disqualified

VICTORIA

Top Six Logs—

VK3ALZ	574 points
3ADW	839
3AIT	753
3DF	753
3APJ	826
3UW	888

Phone—

Cont. Pts.	Cont. Pts.
VK3ADW 314 839	VK3TX 41 101
3AIT 294 783	3ALD 28 94
3DF 274 783	3ARC 48 92
3UW 333 832	3AFO 37 77
3IB3 214 381	3ATN 30 80
3ARD 218 381	3XKM 35 80
3N7 177 348	3ZK 11 79
3AXT 214 338	3LW 37 76
3EP 210 328	3ZJ 16 74
3OM 230 326	3JPH 33 68
3TG 143 413	3ATS 37 63
3ATP 143 413	3HL 36 59
3QV 153 383	3ARE 35 58
3ATA 183 379	3SK 27 57
3GW 153 338	3ALU 31 63
3AUL 150 327	3TL 25 52
3KE 151 319	3XG 14 51
3APF 135 316	3AJP 18 40
3AUK 123 371	3YA 18 40
3WH 80 316	3AUX 20 38
3E 138 185	3AL 16 31
3ZU 78 182	3AZL 12 32
3DY 86 172	3AJP 16 33
3AAT 51 154	3VZ 11 31
3AFF 72 148	3ADU 19 29
3ATR 50 144	3AGD 8 23
3KV 41 139	3ABT 9 34
3AT 71 128	3T 11 23
3ALK 50 185	3VO 7 20
3BP 40 119	3OX 7 19
3AQ 47 118	3AKT 5 18
3AKN 48 113	

Open—

Cont. Pts.	Cont. Pts.
VK3ALZ 889 874	VK3AST 58 111
3APJ 230 825	3KH 31 85
3AAU 171 828	3OT 38 88
3KE 83 177	3AKJ Disqualified

C.W.—

Cont. Pts.	Cont. Pts.
VK3KE 187 423	VK3KE 20 38
3AFQ 140 411	3AKX 8 33
3RJ 108 380	3YS 14 31
3AKN 108 461	3TJ 7 19
3CX 22 88	3UM 7 18

QUEENSLAND

Top Six Logs—

VK4DP	919 points
4RH	833
4UX	809
4YK	809
4BQ	461
4PS	428

Phone—

Cont. Pts.	Cont. Pts.
VK4UX 229 859	VK4CI 32 89
4YK 212 859	4AV 30 73
4BM 189 841	4PU 30 73
4PS 145 828	4CJ 31 88
4BZ 154 388	4XJ 30 85
4LT 191 383	4RW 21 63
4B7 185 349	4SZ 20 61
4HC 100 381	4LE 20 61
4JL 142 397	4VB 18 33
4YK 80 322	4KD 8 31
4BZ 101 322	4CJ 8 31
4CP 118 321	4TUW 19 24
4NS 119 192	4NG 7 17
4B7 129 181	4BZ 9 18
4KU 90 134	4GS 10 13
4OV 51 132	4PA 8 12
4GB 28 106	4PJ 9 9
4BL 81 106	4LS Check Log
4DO 46 101	

Open—

Cont. Pts.	Cont. Pts.
VK4DP 357 819	VK4AK 47 190
4RH 254 823	4SD 23 57
4TY 101 250	

C.W.—

Cont. Pts.	Cont. Pts.
VK4XW 101 251	VK4SH 63 147
4OL 30 207	4CQ 12 20
4TF 23 186	4TE 6 15
4KE 85 188	

SOUTH AUSTRALIA

Top Six Logs—

VK3NO	1389 points
5WO	1645
5PJ	807
5ZK	807
5TC	680
5MS	648

Phone—

Cont. Pts.	Cont. Pts.
VK3PT 322 888	VK3V 41 97
5ZK 300 807	SAX 42 121
5MS 222 842	5JN 56 113
5ZK 288 825	5BZ 55 96
5BQ 152 481	5TN 30 80
5ZB 146 464	5LL 37 75
5EQ 146 406	5JD 32 70
5BZ 138 370	5OV 41 67
5AW 144 369	5PS 15 61
5BG 163 365	5AG 32 55
5LC 106 334	5WH 16 54
5CQ 136 333	5AQ 18 45
5IM 107 316	5KO 16 38
5TD 132 309	5GO 9 34
5N7 106 326	5CJ 18 33
5EN 83 240	5KA 12 28
5DP 82 186	5KH 12 19
5LC 60 185	5WI 9 15
5PM 73 185	5OS 12 14
5CY 60 186	5JO 9 13
5QW 60 187	5WX 9 11
5OK 56 187	5RR 8 9
5LU 54 174	5WW 7 8
5NW 42 131	

Open—

Cont. Pts.	Cont. Pts.
VK3NO 344 1389	VK3VM 64 145
5WO 349 1046	5HM 50 128
5TC 340 880	5RK 20 119
5CJ 16 484	5CR 47 114
5WC 174 433	5DS 38 88
5EF 139 383	5LE 14 34
5CV 67 185	

C.W.—

Cont. Pts.	Cont. Pts.
VK3MY 127 344	VK3EJ 20 77
5EK 100 383	5RC 28 74
5KU 48 138	5MP 38 70
5EJ 45 108	5BQ 38 68
5KO 34 85	5LP 14 33
5KO 30 83	5ML 14 31
5BZ 28 80	5TL 11 21

WESTERN AUSTRALIA

Top Six Logs—

VK6RU	963 points
6RW	830
6CL	830
6AR	830
6AD	830
6SM	830

Phone—

Cont. Pts.	Cont. Pts.
VK6KW 246 582	VK6BO 23 63
6CL 221 582	6CI 23 63
6AR 221 582	6CV 23 63
6AD 180 387	6FU 23 61
6RX 152 343	6JB 20 60
6BZ 146 383	6LS 20 60
6ZJ 137 383	6AS 25 57
6MK 119 378	6TC 21 50
6WL 114 373	6MP 24 48
6RG 115 271	6TC 23 48
6RE 100 248	6MM 19 45
6SR 102 241	6SS 19 43
6QL 102 241	6CW 21 43
6XG 98 218	6EN 14 34
6XG 82 214	6YL 18 24
6XG 82 214	6RW 18 24
6BZ 78 109	6VP 13 20
6HJ 62 139	6RY 14 28
6TR 58 149	6TL 12 24
6CJ 62 143	6CJ 9 23
6RW 52 139	6TX 9 23
6CW 55 136	6LM 10 23
6KK 181 184	6RO 15 22
6AG 55 133	6AG 15 22
6LG 55 122	6DC 11 22
6BL 58 120	6BR 9 22
6BZ 48 108	6AP 9 21
6NP 34 85	6XP 7 21
6BU 36 79	6JG 9 18
6CT 34 77	6GB 6 18
6HE 30 65	6NG 7 15
6RH 32 66	6WI 8 13

Open—

Cont. Pts.	Cont. Pts.
VK6RU 267 258	VK6KE 78 178
6UK 267 258	6WT 82 148
6VK 94 308	6DI 23 38

C.W.—

Cont. Pts.	Cont. Pts.
VK6SM 138 258	VK6BA 7 17
6RW 34 251	6G 6 15
6AS 23 57	6MY 6 15
6RS 10 36	6GM 6 15
6UF 14 36	6RE 7 14
6O 7 30	6BZ 6 14
6IO 9 29	6GA 6 9
6ZO 7 30	6EF Check Log
6AJ 7 30	

TASMANIA

Top Six Logs—

VK7MS	887 points
7AL	705
7SP	650
7RL	627
7RM	446
7MZ	382

Phone—

Cont. Pts.	Cont. Pts.
VK7MS 207 907	VK7PF 20 42
7AL 705 778	7WA 9 40
7SP 650 650	7CA 13 39
7RL 260 627	7BT 30 39
7GC 127 318	7EJ 20 38
7TL 138 310	7DR 9 28
7BK 148 308	7MY 9 28
7KH 132 305	7JP 20 24
7CK 44 178	7WJ 19 23
7DS 91 155	7PJ 12 23
7FJ 71 148	7AL 9 22
7WJ 94 136	7RX 9 22
7DW 12 98	7TO 18 19
7BQ 38 78	7TE 14 18
7CT 21 47	7CF 5 14
7AB 15 48	7LR 9 13
7AD 15 48	

Open—

Cont. Pts.	Cont. Pts.
VK7MZ 134 958	VK7YY 25 57
7AL 44 178	7BJ 30 49
7KS 54 185	7LJ 14 39
7BZ 44 108	7LZ 13 21

C.W.—

Cont. Pts.	Cont. Pts.
VK7SM 144 668	VK7GV 30 63
7KA 131 244	7BJ 30 63
7ZZ 122 214	7OM 18 49
7RY 63 301	7CH 25 50

PAPUA/NEW GUINEA

Cont. Pts.	Cont. Pts.
Phone: VK9AM Check Log	244 850
Open: VK9GP	150 318
9BO	

ANTARCTICA

Cont. Pts.	Cont. Pts.
Open: VK0VK	31 806
C.W.: VK0JB	13 78
OSW and OWE Check Log	

RECEIVING SECTION

Cont. Pts.	Cont. Pts.
New South Wales—	
WIA-1221—E. Abernathy	808 points
W P A. Pascoe	631
L2033-D W Shepherd	568
L2038-D Cranley	485
R. B. Fleming	481
L3064-A. Mullen	342
D. Scheldt	340
L2059-K Dunham	289
P. Vernon	247
L2143-R H. Butcher	171
L2181-J D Walker	137
L2028-D C. Hayes	94
L2110-J D. Dent	88
L2110-H D Russell	86

Cont. Pts.	Cont. Pts.
Victoria—	
WIA-1221—R. Young	639 points
L3068-E. C. Hutchins	585
L3048-E. W. Treblecock	528
RA3043-M. Cadogan	515
L3068-R. Woodman	503
L3088-J. Jobson	383
L3101-N. G. Harrison	361
R. Cox	315
L3063-I. D. Thomas	259
L2074-J. M. Hillard	240
L2038-D. H. Jenkin	89
L3104-N. Dunlop	29
L3086-L. Banks	43

Cont. Pts.	Cont. Pts.
Queensland—	
T. A. Lane	383 points
L. O. Talley	169

Cont. Pts.	Cont. Pts.
South Australia—	
T. C. Wehr	1584 points
WIA-15039-P. J. Field	682
Miles O. J. Martin	638
L2067-P. J. McDougall	578
L2068-L. T. G. Dicker	518
L2043-S. Gregory	263
D. R. De Cean	289
K. Russell	111

Cont. Pts.	Cont. Pts.
Western Australia—	
WIA-16221-P. W. Drew	586 points
L2003-P. H. Price	493
L2008-D. S. Pratt	425
L2001-P. W. L. Hardwick	396

Cont. Pts.	Cont. Pts.
Tasmania—	
R. A. De Balfour	955 points
G. C. Johnson	542
G. F. Sharp	368
WIA-17022-R. L. Harwood	125



Mr. TV SERVICEMAN!

IF . . . you run a reliable business that is based on the honest profit concept

IF . . . you are interested in increasing your turnover, and giving a better deal to the set owner

Then you and

TELECOMPONENTS

are in synch.

and we would like to do more business with you



IN RETURN WE OFFER YOU . . .

- Guaranteed E.H.T's., Line Output Transformers, all Coils, Power Transformers and Chokes, tropic proofed and tested in the chassis nominated.
- Guaranteed replacement windings at a fraction of the cost of the complete part, yet fitted in minutes.
- Fair and reasonable trading terms.



- Comprehensive 25-page Catalogue and Price Lists available from factory, or from your nearest Telecomponents Wholesaler.

FERRIS BROS. PTY. LIMITED

752 PITTWATER ROAD, BROOKVALE, N.S.W.
6 VICTORIA STREET, WOLLONGONG, N.S.W.
51 DENISON STREET, NEWCASTLE, N.S.W.
44 EGAN STREET, RICHMOND, VICTORIA
22 THURLOW STREET, NEWMARKET, QUEENSLAND

TELECOMPONENTS WHOLESALERS

Tedco Pty. Ltd., Box 195, G.P.O., Perth, WA
Radio Electric Wholesalers Pty. Ltd., 10-12 Orsmond St.,
Hindmarsh, S.A.
W. & G. Genders Pty. Ltd., 53 Cameron St., Launceston;
52 Stewart St., Devonport, 69 Liverpool St., Hobart,
35 Mount St., Burnie, Tas
Edmunds Bros Pty Ltd, 270 Lonsdale St., Melbourne

TELECOMPONENTS

PTY.
LTD.

A UNIT OF THE FERRIS GROUP OF COMPANIES

NATIONAL FIELD DAY CONTEST, 1962

Dates: Saturday, 10th, and Sunday, 11th February, 1962.
Duration: Saturday, 1900 to 2300 hrs., Sunday, 1000 to 1600 hrs.

Objects: The operators of Portable and Mobile Stations within all VK Call Areas will endeavour to contact other Portable/Mobile and Fixed Stations in Australian and Oversea Call Areas.

RULES

1. There shall be five sections in the Contest:—

- (a) Portable/Mobile Transmitting, Phone.
- (b) Portable/Mobile Transmitting, C.W.
- (c) Portable/Mobile Transmitting, Multiple Operators, Open only
- (d) Fixed Transmitting Stations working Portable/Mobile Stations, Open only.
- (e) Reception of Portable/Mobile Stations.

2. All Australian Amateurs may take part. Mobile or Portable Stations shall be limited to an input of 25 watts to the final stage. This power shall be derived from a self-contained and fully portable source. A Portable/Mobile Station shall not be located within one mile radius from the home(s) of the operator(s), nor be situated in any occupied dwelling or building.

Portable/Mobile Stations may be moved from place to place during the Contest.

No apparatus shall be set up on the site earlier than 24 hours prior to the Contest.

All Amateur bands may be used, but no cross-band operating is permitted.

3. Amateurs may enter for either (a) or (b), or both, in the Portable/Mobile sections.

4. One contact per station for phone and one for c.w. per band is permitted.

5. Entrants must operate within the terms of their licences and in particular observe the regulations with regard to portable operation.

6. Serial numbers consisting of RS or RST report plus three figures commencing with 001 and increasing by one for each successive contact shall be exchanged.

7. Scoring.—

(a) **Portable Mobile Stations:**

- For contacts with Portable/Mobile Stations outside entrant's Call Area 15 points
- For contacts with Portable/Mobile Stations within entrant's Call Area 10 points
- For contacts with Fixed Stations outside the entrant's Call Area 5 points
- For contacts with Fixed Stations within the entrant's Call Area 2 points

(b) **Fixed Stations:**

- For contacts with Portable/Mobile Stations outside entrant's Call Area 15 points
- For contacts with Portable/Mobile Stations within entrant's Call Area 10 points

8. The following shall constitute Call Areas VK1 and VK2 combined,

VK3, VK4, VK5 and VK8 combined, VK6, VK7, VK9 and VK0.

9. All logs shall be set out under the following headings: Date/Time (E.A. S.T.), Band, Emission, Call Sign, RST/No. Sent, RST/No. Received, Points Claimed. Contacts must be listed in numerical order.

In addition, there shall be a front sheet showing the following information:—

Name Address
Call Sign Section
Call Sign of other operator(s) (if any)
Location of Portable/Mobile Station
From hours to hours
From hours to hours

A brief description of equipment used, bands used and points claimed, followed by the declaration.

"I hereby certify that I have operated in accordance with the rules and spirit of the Contest."

Signed Date

10. The right is reserved to disqualify any entrant who, during the Contest, has not observed the Regulations and the Rules of this Contest or who has consistently departed from the accepted code of operating ethics.

11. The decision of the Federal Contest Committee of the Wireless Institute of Australia is final and no disputes will be entered into.

12. Certificates will be awarded to the highest scorer in each Call Area. Additional Certificates may be issued at the discretion of the F.C.C.

13. **Return of Logs:—**

All entries must be postmarked not later than 10th March, 1962, and addressed to the

Federal Contest Committee, W.I.A.,
Box 8511, G.P.O.,
Hobart, Tasmania.

RECEIVING SECTION

14. This section is open to all Short Wave Listeners in VK Call Areas. The Rules shall be the same as for the Transmitting Stations. Logs shall take the same form as for Transmitting Stations, but will omit the serial number received.

Logs must show the Call Sign of the Station heard, the serial number sent by it and the Call Sign of the Station being worked.

Only one lot of points can be claimed for any one contact between two stations, for example: VK2AA/P calling VK3XX/P and exchanging numbers. Points can be claimed only for VK-2AA/P working VK3XX/P. NO points can be claimed for VK3XX/P working VK2AA/P during this particular contest.

Scoring will be on the same basis as for Transmitting Stations. It will not be sufficient to log a station calling CQ. A station may be logged once only for phone and once for c.w. in each band.

Awards.—Certificates will be awarded for the highest scorer in each Call Area.

BRIGHT STAR CRYSTALS

FOR ACCURACY, STABILITY, ACTIVITY AND OUTPUT



Our Crystals cover all types and frequencies in common use and include overtone, plated and vacuum mounted. Holders include the following: DC11, FT243, HC-6U, CRA, B7G, Octal, HC-18U

THE FOLLOWING FISHING-BOAT FREQUENCIES ARE AVAILABLE IN FT243 HOLDERS:—

6280, 4695, 4535, 2760, 2524 Kc.

5.500 Kc. T.V. Sweep Generator Crystals, £3/12/6.

100 Kc. and 1000 Kc. Frequency Standard,

£3/10/6 plus 12½% Sales Tax.

Immediate delivery on all above types.

AUDIO AND ULTRASONIC CRYSTALS—Prices on application, 455 Kc. Filter Crystals, vacuum mounted, £6/10/6 each plus 12½% Sales Tax. **ALSO AMATEUR TYPE CRYSTALS—3.5 AND 7 Mc. BAND.**

Commercial—0.02% £3/12/6, 0.01% £3/15/6, plus 12½% Sales Tax.

Amateur—from £3 each, plus 12½% Sales Tax.

Regrids 21/10/..

CRYSTALS FOR TAXI AND BUSH FIRE SETS ALSO AVAILABLE.

We would be happy to advise and quote you.

New Zealand Representatives: Messrs. Carrol & Carrol, Box 2102, Auckland.

Contractors to Federal and State Government Departments.

BRIGHT STAR RADIO

46 Eastgate Street, Oakleigh, S.E.12, Vic.

Phone: 57-6387

With the co-operation of our overseas associates our crystal manufacturing methods are the latest.

Mullard Alloy Diffusion Technique

High frequency transistors for cordless radio receivers

One of the most important recent advances in transistor technology is the alloy-diffusion technique used by Mullard. This technique provides transistors with uniform high frequency characteristics and enables the design of low cost cordless radios of superior performance.

OC169 - OC170 - OC171

Transistor Type	OC169	OC170	OC171
Collector Voltage (V_{cb} max.)	-20	-20	-20 V
Collector Current (I_c max.)	10	10	10 mA
Max Dissipation (25° C)	80	80	80 mW
Typical parameters at measured at $V_{ce} = -6V$, I_c (mA)	0.45 {common emitter}	10	100 Mc/s {common base}
Input Conductance	0.4	2.5	23 mmhos
Input Capacitance	80	65	-6 pF
Feedback Admittance	< 100	100	600 μ mhos
Transfer Admittance	36	32	14 mA/V
Output Conductance	7	60	350 μ mhos
Output Capacitance	7	4.5	2.6 pF
Ideal Unilateralised power gain	61	32	> 10dB



NEW

Mullard

high

frequency

range

Mullard



MULLARD AUSTRALIA PTY. LTD.

Head Office: 35-43 Clarence St., Sydney, N.S.W. 29 2006
123-129 Victoria Pde., Collingwood, N.S. Vic. 41 6644
ASSOCIATED WITH MULLARD LIMITED LONDON

MT117X

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

S.S.B.—COMMENTS ON EDITORIAL

Editor "A.R.L." Dear Sir,

As one of the pioneer s.s.b. operators in this country, who was over 25 years of s.s.b. operation on 14 Mc., my reading of the Editorial in the October issue of "A.R.L." has prompted me to write and let you know my opinion. The Federal Executive, over whose name the Editorial appears, is completely out of touch with s.s.b. operation on the 14 Mc. band.

The history and present set-up of 14 Mc. s.s.b. operation is as follows:
Early VK and overseas s.s.b. work was done between about 14,100 and 14,300 Kc. Early W operation took place anywhere in the W phone band.

By 1963 the W s.s.b. stations had congregated below 14,300 Kc. and s.s.b. operators elsewhere began to use the 14,300-14,350 Kc. section of the band, or, operated inside the W phone band, a course which in the early days of s.s.b. was a necessity, as often s.s.b. we never listened outside their phone band. This set-up existed late in 1958, when a move was made to the 14,300-14,350 Kc. range, the upper limit of the W phone band to 14,350 Kc.

The proposed move was by no means popular, either here or overseas, and many clubs and private individuals, both in the U.S.A. and in other countries, put their views in writing, but to the F.C.C. they were lost. In fact, they considered the consequences would be. However, the W phone band was widened, as proposed, early in 1960, to cover the 14,300-14,350 Kc. range.

There followed a period of utter chaos amongst the s.s.b. fraternity, over the whole face of the globe for the best part of six months. The s.s.b. operators, who were given signals into the 14,300-14,350 Kc. section of the band. Unfortunately a large percentage of the signals appeared to be originated by operators with hostile intentions, and absolutely no courtesy. The law of the jungle truly prevailed.

Offices were rudely broken into with squawks of "break break," not by one operator but by many, most of whom were never heard of again after they were given a report. A few operators, who were with us in the U.S.A. in any country, would be broken into by five, six or more stations, without so much as "by your leave," one of whom frequently would appoint himself as M.C. of the whole set-up.

As often as not the original stations, (1) shut down in disgust, (2) waited to another chance to be heard, or (3) if they chose, told the inconsiderate ones in no uncertain terms to clear off and continued their QSO.

Many operators, including the writer, almost ceased operating for some months and did a large amount of listening in an endeavor to get a valuation, and, slowly but surely a workable pattern clearly emerged.

The European s.s.b. operators, because of their geographical location, were amongst the best. They were given the VKR signal and found below 14,300 Kc. and finally congregated in the 14,100-14,130 Kc. section of the band. The VK and A.V. operators, who were the world followed suit, to escape the W QRM, and after all there are over 200 other countries in the world to work besides the U.S.A.

The VK and A.V. operators, who were the world followed suit, to escape the W QRM, and after all there are over 200 other countries in the world to work besides the U.S.A.

The VK and A.V. operators, who were the world followed suit, to escape the W QRM, and after all there are over 200 other countries in the world to work besides the U.S.A.

The 15 Kc. DX s.s.b. segment of band stems from the foregoing situation, one which they were tired of us are aware that solar activity plays a major part in the propagation of Radio signals from one point to another point and that the conditions of reception of sunspot activity is in the form of sunspot numbers.

It should interest all concerned that there is a period of low sunspot numbers almost with us at present. The sunspot activity is such that a near zero sunspot minimum will be reached by early 1965. (By way of comparison, the sunspot activity was at a minimum around the 70 mark and for October 1961 it was 51 it can be seen therefore that reception difficulties on the higher frequencies in particular are likely to be experienced during the next three years or so.)

With the above in mind, it will be necessary for us to be prepared to take the steps that during the period concerned the iono-

and almost always there are now a few of them about.

Again, on 14 Mc., upper sideband is transmitted, so a conscientious operator with a clean room transmission, would have to keep at least 1 Kc. in from the band edge. One could guarantee that at the 14,350 Kc. edge of the segment there would be splatter from stations transmitting the "W" QRM (A.V. Kc., so the 15 Kc. would be really narrower than what it would first appear.

The present set-up is as follows:
s.s.b. operators who wish to keep clear of W QRM, and work other DX, or work only one W station at a time, usually operate around 14,100-14,130 Kc. and use the W QSOs specify the frequency on which they intend to listen for replies. Operators anxious to engage in the "W" QRM, or those who wish to contact DX or other stations operating in the W phone band, themselves operate inside the W phone band, either on, in the case of round tables, or adjacent to in the case of DX, the frequency of the other station.

A few operators are sometimes found around 14,300 Kc. but not many. However, W s.s.b. operation can now be frequently heard from 14,300-14,350 Kc. over the full width of their band.

VK s.s.b. activity is growing rapidly. Frequently on an evening there are more VK s.s.b. stations than s.s.b. ones audible on the band in Sydney, and in New York. I have mentioned the matter to, has heard any of you active on 14 Mc. or any other band.

—N.N. Southwell, VK2FZ.

F.E. COMMENT ON VEEB'S LETTER

Editor "A.R.L." Dear Sir,

First let me correct Mr. Southwell's impression, and perhaps others, that the Editorial was meant to imply that s.s.b. operators in Australia should restrict their operations to the "top 15"—if such impression was created, we apologise, as this was certainly not the intention, nor would the Executive attempt to convey such policy without the proper authority of the Federal Council.

It is well known that in the U.S.A. stations are required, by regulation, to operate within certain sections of an Amateur band. This has been found necessary by the F.C.C. to preserve the peace and order in the U.S.A. and the world's Amateurs who reside there. We, in Australia, are in a much more fortunate position in that we are not regulated by any of our bands are not regulated by the assigning authority. The present voluntary subdivisions in our bands are the results of lengthy and detailed consultation with our members, and the subdivisions, incidentally, being between phone and c.w. only.

In the case of 14 Mc., the subdivisions are 14-14.1 Mc. for c.w. exclusive, and 14.1-14.35 Mc. for phone emissions which include a.m., n.m., p.m., d.s.b. and s.s.b. The Editorial, with these points taken for granted, recommended that any Australian s.s.b. operator at the top end of the 14 Mc. band should follow the A.R.L.I. recommendations and for their convenience, and yours, not work any U.S. station in the "top 15". The wisdom or otherwise of the A.R.L.I. in making these suggestions is not for me to say, but through all knowledge of all the facts that led thereto, but I believe that in view of the League's position of non-recognition, and was not lightly made; and the Executive therefore felt incumbent to pass on the recommendation to all s.s.b. operators.

If the above is ignored the Editorial, that is their business, but do not say later that the "top 15", because of the Americans, has been revised in us for the better, and that the world. A little bit of extra band space is surely always welcome.

—Major W. Mitchell, for Federal Executive.

SUNSPOT ACTIVITY

Editor "A.R.L." Dear Sir,

It should interest all concerned that there is a period of low sunspot numbers almost with us at present. The sunspot activity is such that a near zero sunspot minimum will be reached by early 1965. (By way of comparison, the sunspot activity was at a minimum around the 70 mark and for October 1961 it was 51 it can be seen therefore that reception difficulties on the higher frequencies in particular are likely to be experienced during the next three years or so.)

With the above in mind, it will be necessary for us to be prepared to take the steps that during the period concerned the iono-

spheric layers will become less dense because of less activity and in turn, this in turn, will result in the m.u.f. for h.f. communication becoming progressively lower and the available frequencies for such communication becoming progressively less.

Our 3.5 Mc. band should be much in demand from now on, both by day and by night until such time as the trend towards zero sunspot minimum continues.

—Eric W. Treblecock, B2R19E.

R.D. CONTEST OPERATING

Editor "A.R.L." Dear Sir,

I have read with a certain amount of amusement, sundry letters in your columns moaning about the rough tactics of some operators in the R.D. Contest.

It seems strange that the operators who really care well do not must about the rest-after all, they spend the most time on the air and should therefore be in a position to pass judgment on what should or should not be done. I must admit I really enjoy participating in this Contest Apart from the continual battle of tactics in endeavouring to get through the various sections, it brings me back to many memories of war years, of friends who never came back, of the thousands who threw themselves into a maelstrom of war, in the name of freedom—freedom for us to come and win.

Every R.D. Contest teaches me something—it teaches me to be uncomplaisant that I must improve something—maybe it's the changeover switching this time, the receiving another time, band changing, and netting selectively. Perhaps of our dearhater friends could do the same objective attitude they could improve their gear (and their outlook) to such a point that they would find it necessary to complain about some naughty boys trading on their corns.

I must admit there are a few signals which don't come up to modern standards, but I would hesitate to condemn those concerned. I would rather say "Thank You" to them for making a mistake. In making a mistake, I would also say that if you yourself can honestly feel not guilty to putting a bad signal on the air, or some air, or making a mistake, or either a commercial liar, treacher or you just haven't done much experimenting. The genuine Ham likes a candid, but accurate, report and his signals will break down at the most awkward times.

In conclusion, I would like to pass my regards to all my old and new friends. See you again in the next R.D.

—G.W. Groves, VK7XL.

P.S.—The rules of the R.D. Contest do not specify the wearing of kid gloves.

THE LATEST CALLS

Editor "A.R.L." Dear Sir,

What do others think? Well, I find that Peter VK2FZ has adopted a very narrow view of the use of Z calls. Perhaps he can't understand that some people are more content to work v.h.f. than the lower frequencies.

Z call is the easiest way to obtaining a full licence, using the intervening period to work on the code. However, some operators find the "call of the wild" or h.f. stronger than the "call of the domestic cat" and to some give v.h.f. operators, which in fact requires far more technical skill than to build up simple gear on, and work the lower frequencies. Perhaps he can't operate v.h.f. DX, they get more kick out of working VKs and JAs from VK3 on 80 metres, or lower frequencies. I have seen Yanks on 30-after all, it doesn't take much effort to work a Yank on 30!

What a boost they could give to the lower frequencies! I think that the lower frequencies don't need any boosting—take 40 mX on a busy evening, you can't find a spare cycle, why then, why not, why not, why not, why not to fill the empty wastes of 8 and 2 mX where there is plenty of room.

The suggestion that the Limited licence be made for one year only is a very silly one—for this would indeed deny the medium of Amateur Radio to some, including myself, who enjoy it to the full, and would not deem it worthwhile to make the effort to take the exam. under those circumstances.

Even now, though I find myself in the position of having passed the c.w. exam and awaiting a full licence, I find that a majority of my own operating will still take place on the v.h.f.s, and I think this is the attitude of a substantial number of operators.

If the Limited licence is to be current for one year only, there would possibly be few indeed who would wish to find time to prepare the exam to pass the c.w. within 13 months so why give them a call sign at all? To summarise, I think the Z licence is a step forward from the old system, because—

AMATEURS USING THE GELOSO G222-TR TRANSMITTER
SAY: "THEY GET RESULTS LIKE A 150 WATTER!"

**A.M. PHONE AND
C.W. RIG**

**Six H.F. Bands,
80-10 Metres**

- V.F.O. controlled.
- Pi-Coupled output.
- Solid "Talk Power."
- Plate and Screen modulated at 100%
- T.V.I. Proofed.
- 75w. input c.w.; 65w. phone; 52w. output.
- Crystal Mike input



Price £112/0/0 plus 12½% Sales Tax (freight extra) Immediate delivery.

WILLIAM WILLIS & CO. PTY. LTD.

THE HOUSE OF QUALITY PRODUCTS

428 ELIZABETH STREET, MELBOURNE, C.1 Phone 34-6539

CHOOSE THE BEST—IT COSTS NO MORE



O. T. LEMPHIERE & CO. LIMITED

Head Office 27-41 Bowden Street, Alexandria, N.S.W.
 and at Melbourne • Brisbane • Adelaide • Perth

DURALUMIN, ALUMINIUM ALLOY TUBING

IDEAL FOR BEAM AERIALS AND T.V.

★ **LIGHT** ★ **STRONG** ★ **NON-CORROSIVE**

STOCKS NOW AVAILABLE FOR IMMEDIATE DELIVERY

ALL DIAMETERS—¼" TO 3"

Price List on Request

STOCKISTS OF SHEETS—ALL SIZES AND GAUGES

GUNNERSSEN ALLEN METALS PTY. LTD.

**SALMON STREET,
PORT MELBOURNE, VIC.**

Phone 64-3351 (10 lines)
 Telegrams: "Metals," Melb.



**HANSON ROAD,
WINGFIELD, S.A.**

Phone: 45-6021 (4 lines)
 Telegrams: "Metals," Adel.

THE NEW "A.R." LOG BOOK

IS NOW AVAILABLE

Larger, spiral-bound pages
 with more writing space.

Price 5/6 each

Postage extra.

Obtainable from your Divisional
 Secretary, or W.I.A., P.O. Box 36,
 East Melbourne, C.2, Victoria

LOW DRIFT CRYSTALS

FOR

**AMATEUR
BANDS**

**ACCURACY 0.02% OF
STATED FREQUENCY**

3.5 and 7 Mc.

Unmounted, £2/10/0

Mounted, £3/0/0

12.5 and 14 Mc.

Fundamental Crystals,

"Low Drift,"

Mounted only, £5.

THESE PRICES DO NOT
 INCLUDE SALES TAX.

Spot Frequency Crystals
 Prices on Application.

Regrinds £1/10/0

MAXWELL HOWDEN

**15 CLAREMONT CRES.,
CANTERBURY, E.7,
VICTORIA**

VICTORIA

90 Mc.—During the month of Oct. the band has been very quiet following much the same pattern as the winter months. George 3ZCG at Morwell on 3615 Mc and Stan 3ZAB at Traralgon on 48 Mc. heard on 30 Mc. Both DX each lunch time and 3ZBV at Morwell will be joining them as soon as his beam is finished. On 10th Oct. between 2130 and 2200 hrs. E.A.S.T. 3ZBP and 3ZCG heard on 30 Mc. but it was not possible to identify the call signs. On 30th Oct. Jim 3AZZ at Frankston worked David 3AW at Penola on 5 mhz and 3ZBV at Morwell so they tried 8 mhz and had a two-way contact with 5 and 8 mhz.

Bill 3XK at Hesham reports quite a bit of 6 mhz activity down in his part of VIC including such stations as 3FX, 3ZPG, 3UT, 3AKR, 3AKN and 3ANQ. A new station on this band is Ian at Geelong located at Blackburn. Ian is running 12W input to a 2E30 and is using a dipole as a temporary antenna. John 3ZHN now has his 30 ft. long beam on top of an 80 ft. tower and is intent on working DX.

The Oct. 6 mhz scramble took place on Sun., 22nd, at 745 p.m. Once again activity was rather poor and only fifteen stations participated, including a surprise entry in the form of Bert 3ZU, at Kilmore. Peter 3ZDO was the winner for the evening with 13 contacts with numbers of 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

The Oct. 6 mhz scramble took place on Sun., 22nd, at 745 p.m. Once again activity was rather poor and only fifteen stations participated, including a surprise entry in the form of Bert 3ZU, at Kilmore. Peter 3ZDO was the winner for the evening with 13 contacts with numbers of 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

The Oct. 6 mhz scramble took place on Sun., 22nd, at 745 p.m. Once again activity was rather poor and only fifteen stations participated, including a surprise entry in the form of Bert 3ZU, at Kilmore. Peter 3ZDO was the winner for the evening with 13 contacts with numbers of 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403,

TYPE 65

General purpose with low frequency response suitable for lively halls.

TYPE 66

P.A. use where less low frequencies are required than the 65 with a lift in the middle frequency to ensure high output without feedback.

TYPE 67

Communication use, has a further reduction in low frequencies than the 66 and increase in high frequencies for intelligibility through noise.

THREE INDIVIDUAL TYPES IN THE FAMILIAR "65" CASE

★

Available in Low (M.D.)
50 ohms, and High
(M.A.) Grid Impedance.



Retail Price including Sales Tax

Type 65 MA	£11/0/7
" 65 MD	£8/10/0
" 66 MA	£11/3/6
" 66 MD	£9/3/0
" 67 MA	£11/3/6
" 67 MD	£9/3/0

ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, S.E.6, VICTORIA

PHONES: BL 1300, BL 4556

*AEGIS

*Australia's Own Brand

TESTED RADIO, T.V. and HIGH FIDELITY PARTS

- ★ FILTERS
- ★ COILS and I.F.'s.
- ★ SPEAKERS
- ★ KNOBS, DIALS, POINTERS
- ★ AMPLIFIERS
- ★ CONTROL UNITS
- ★ TUNERS, KITS

AEGIS MANUFACTURING CO., 347 DAREBIN RD., THORNBURY, VIC

Phone 49-1017

Page 19



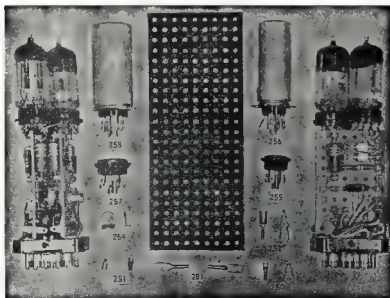
Season's Greetings
TO ALL!
 ESPECIALLY those who by their continued
 support have contributed still further to the
 widespread popularity of —
QUALITY A & R PRODUCTS!

**ELECTRONIC
 A & R
 EQUIPMENT**

A. & R. ELECTRONIC EQUIPMENT CO. PTY. LTD. 378 St. Kilda Road, Melbourne, S.C.T. *AX 1750, AX 115v*

REDUCE THE SIZE AND COST OF YOUR NEW EQUIPMENT

**TYPICAL
 UNITS
 USING
 ZEPHYR
 MATRIX
 SYSTEM**



Leaflets and
 Price List available
 from all
 leading Wholesalers.



Enquiries invited
 from
 Manufacturers.

ZEPHYR PRODUCTS PTY. LTD.

58 HIGH STREET, GLEN IRIS, S.E.6, VIC.
Phones: BL 1300, BL 4556

along and see what happens. There will probably be Alma of some sort and Bob ZAGR is proud to take a film of ZAGL waving up. I reckon it will be worth a look to see Bill pour the coffee and bring it round. The usual place, University College of N.S.W., Sydney, on the date of the meeting is on Friday, 8th. For those not able to attend, a little advice, you'll have to hang up a chair for it and stand at 73 for Christmas, see you next year, ZAGX.

BLUE MOUNTAINS SECTION

Preparations for the section field day were finalised at the October monthly meeting where eleven members attended with Vice-President Bob ZAGS in the chair. The lecture was the one cancelled last month as the members on annual holidays. A good night was had by all, although the meeting closed early 1AWW from St. Mary's, a new member was welcomed into the club and apart from normal d.c. and v.h.f. operation, is keen on Amateur tv.

The Scout Jamboree of the Air went off quite successfully with stations Bill ZTS operating at Katoomba, Bill ZHZ at Springfield, Peter ZAD at Blackland, Don ZAGL at Brook, Al ZAXU portable at Penrith, and Bob ZASZ at St. Mary's, and yours truly at Cammeraj. Although the QRX was very bad, all stations were kept busy. Besides the usual lot of the Scouts enjoyed for the first time talking with neighbouring and distant Scouts. Many sections were visited, and the usual advice on various hikes, etc., was given by the mountain troops to several neighbours. The Canadian troops received the front page publicity including a photo of the boys and equipment used. Publicity for the Blue Mountain troops is still being organised. A note of thanks will appear in the next issue.

The field day held on 8th Nov. at Lawson Swimming Pool was well attended with 54 registrations. The day was very successful and was unusual and confusing in that it had two foxes on a similar frequency at the same time. This was won by Les ZBJ and Dave ZAWZ. The QRX, especially after the Dick ZCZF, second was Dave ZAWZ. The 7 Mc. scramble Harold ZAAK and John ZWJ were out. Other girls winning were John ZWJ, Sid ZBW, Peter ZJX, Mrs. ZDR, Mrs. ZJFW and Mrs. ZQA. The bus trip for the ladies in the afternoon was very enjoyable. The dandelion about which proved very enjoyable. Yours truly would like to take this opportunity on behalf of the Blue Mountain Section to thank all and everyone who made the day hope to see you and many more for a bigger and better event next year.

Deerd WZJ and Ken ZAVN (at Blackland) and Norm ZQA (at Blackland) demonstrating bush fire mobile 2 mx equipment to the Blackland Bush Fire Brigade. By all reports the demo was effective and successful. Alec ZEX is still looking for a rock for his 2 mx converter. His tx has a 6/40 in the final which is unable to work the other night. Must have a bug in it. Alec Jack ZADF to back from holidays and although the weather was unfavourable for the first week and cold the next week, it appears he has been very enjoyable holiday. Our mate, Noel Walker, had not finished his RX on the 1.6 bands. Apparently you have been listening in on the local 2 mx gossip. Noel.

Al ZZFR is back on 3 mx with a new mobile. The RX for 3 mx is now up and running, also it looks like Al will have to do a bit of horse trading with his present car so as to make use of his new transistor power supply. Sid ZWJ is pointing a finger and pointing with his portable rig from Forster. It appears that Sid's first couple of weeks have been very successful. Good to hear you, Sid. Warwick ZEMB is back on the air with his conversion after a long study being the main cause. Chasero, 73. ZADA

BOORABBIN DISTRICT RADIO CLUB

On 14th Dec. activity set school radio clubs have been on the air regularly on conducting many VKAs and even getting pleasing reports from VKA when conditions have been favourable. The 30 mx dipole is working well and the length of the 30 mx dipole which has proved to be too short by several inches. This will be put right by the time these notes appear.

A number of new members have joined the club and our numbers have increased to around 20. Many of the newcomers have been interested in electricity and are now puzzling with resistance and capacitance.

Afterwards have finished there will be another Sunday trip to Dural to see ZWI in action. The visit earlier in the year caused a great deal of interest and arrangements for the trip of the new members join the party this time.

OBITUARY

JACK PIKE, VKXP

Tuesday, 17th October, saw the passing of one of the real old timers of Amateur Radio. Jack Pike, VKXP, suffered a sudden heart attack and now must be numbered as one of the growing band of pioneer pioneers in the radio art, who all too rapidly are passing beyond our ken.

Jack was one of the founders of the Wireless Institute in 1910, having commenced experimental work several years before that date, operating a spark transmitter with which he exchanged traffic with commercial and naval vessels in Australian waters. His pre-war work I call sign was KXP.

In association with Chas. MacLurean, ZCM, and Basil Cooke, of Sydney Observatory, Jack constructed vital parts of wireless gear to permit reception of time signals on very long waves from overseas, and was one of the first to receive long wave transmitter signals from Joe Keed, who unofficially experimented with the Collins House Post Office Station in Melbourne.

Using a multi-stage T.T. receiver on 300 metres, Jack was successful in 1933 in receiving signals from Major Mot, of California.

For many years VKXP had concentrated on 14 Mc. operation and had many friends throughout the country. The Canadian troops during the war. On the week-end prior to his sudden passing away, Jack was conducting experimental work on the erection of a vertical reception line with low angle radiation vital for long distance communication. He will be sadly missed by Amateurs operating in practically every country of the world.

Our deepest sympathy is extended to his widow, Mollie, and his family in their sad bereavement.

ERIC MCCREADY, VKVEV

The death occurred recently of yet another of our well known amateurs, Eric VKVEV, latterly of Brighton-le-Sands, New South Wales.

Eric will be remembered by many of the Amateurs of yesterday as one of the original members of the Lankford Radio Club. The sympathy of members is extended to his family.

If Ian ZAPF does not take a job before the end of the year he will be on a new project rolling. It is the building of a new project for the club using the ATZ v.f.o. presented by the Institute. The final will be an 807 with about 40 tubes. The main part of the 2 mx rig being built up next year, so watch out you 2 mx boys. TB, Bruce, for ZATZ.

— — —

VICTORIA

The lecture arranged for the November meeting had to be cancelled at the last moment but it was indeed fortunate that Kel ZEPQ, latterly of the Victoria Amateur Radio magazine, was able to come along and tell us the story of his one-man expedition to Alice Springs.

Although the main object, that of providing contacts with VKX on 60 Mc., was achieved only in part, because of poor conditions, it was indeed that of a successful trip. His description of the plane journey showed that all travel off the main routes has little in common with the advertisements. The photographs taken from the air made the city dwellers realise how little they know about their own country. Incidentally, Kel mentioned that although the panoramic camera was working, his baggage was 80 lbs. overweight! The ground staff were curious about the collapsible beam and obviously doubted the sanity of its owner.

Kel discussed in his cheerful ironic style, with an apt choice of words, a dry wit (well suited to the subject), a sharp eye for detail, and the technique of making the most of a good story (I hereby swear on a stack of A.R.L.I. Handbooks that I am not being paid by the Editor for this article) as one who were enlightened by his dissertation on the effect of isolation on the social and economic life, the problems of the Aborigines, the supreme importance of the bush as a country. On the radio side, it appears that the difficulties caused by heat and dust are compensated for by the advantages of a DX station. In addition,

Kel is an expert photographer which was shown by the colour slides which illustrated the lecture.

The President, David ZADW, thanked Kel for a most absorbing talk which was both interesting and instructive.

The following new members were approved by the meeting: Mr. Launce and Mr. Tarrin, associates, and G. Richardson (ZAVT), J. Wallace (ZSVT), A. Johnson (ZSMK), K. Nibbel (ZSMK) as 10 members.

The December meeting will be devoted to the family social night with entertainment for the children. It is expected that the ubiquitous Father Christmas will be there as usual.

The first meeting for next year has been set for February 7, 73, A.R.L.

MOORABBIN AND DISTRICT RADIO CLUB

The above club made history at the third gathering of Senior Scouts at Clifford Park on the week-end of 21st and 22nd October, 1961. The week-end in question coincided with the fourth Jamboree on the Air, an annual event which is becoming more popular each year. Clifford Park, near Croydon in Victoria, is a magnificent property some 25 miles to the east of Melbourne.

The Moorabbin and District Club was approached by the Scout organiser, Mr. Keith and members of the club. The club was pleased to be able to help the 500 or so Senior Scouts gathered at Clifford Park by going portable for the week-end. This, in addition to their other activities, included erecting, archery, "operation impossible" and caving. It was added the Jamboree on the Air, the first time that other fellow Scouts in Australia and overseas.

Some weeks prior to the event a group of members travelled to the Park and preliminary planning arrangements were made. This was followed on the week-end before the Jamboree for members to erect antennae and to set out the equipment under operating conditions. On the Sunday in question, Bert Rodda, of newspaper fame, took a snap which was especially appealing to the Melbourne newspaper, and Harold ZAPQ took himself in the papers! On the Wednesday evening, we saw our President ZAWO on t.v. and a radio broadcast. The club was quite a bit of publicity had resulted and on the air under their own call signs, club members were heard all around and many QSOs had been tied up.

In all fifteen members formed the operating team and separate equipment, both receiving and transmitting, were made. This was set down to 144 Mc. The operation was split two ways. One group consisting of Arthur ZAWO, Bob ZNZ, Ken ZACS, Stan ZTZ, Graham ZEMQ and John ZPZ, and the other group consisting of set up for 3.6 and 14 Mc. in a marquee near the main scene of Scouting operations. The gear consisted of a 600 3 Mar 2 for 3.6 and a 60w home-brew tx with a Collins 76A4 rx. Antennae consisted of two long wires (300 ft.), the couple of horizontal wires in the marquee. The equipment was powered from a 2.5 C.C. mains.

The second group consisted of Harold ZAPQ, Peter ZAPD, Al ZLC, Kevin ZARD, Ray ZJJ, Greene ZJZF, Don ZAGQ and Heper Doug ZAGQ. The group was set up in the Marquee Hill over looking the other activities and was powered by two motor alternators, petrol driven. The frequency was 144 Mc. and 21 Mc. in the h.f., and 50 and 144 Mc. in the v.h.f. range, and the gear consisted of another Collins 76A4 rx and an AEM converter/AMR300 converter. The gear failed at the last moment. The antenna was a multi-dipole h.f. and beams on the v.h.f.

On all bands a total of 104 contacts were made. The results were very good and many QSOs going for an hour or over the number represented a lot of transmitting time.

From the Scouts and their organisation was first to be heard, but hours throughout the period of activity. The first group was heard at both operating sites. In general, preference was shown for Q5 144 contacts to the 3.6 contacts. The results were very good. This applied especially to overseas contacts such as those with Hong Kong, Bangkok, California, Ohio and G land.

The 3.6 contacts were mixed bag. 80 Mc. was full of QRN until late on Saturday night when it cleared. As a consequence the 80 Mc. didn't go QRT until 2 a.m. on Sunday! The 144 contacts were very good. The stations who were using it—with the early forenoon being the best for good copy, 20 mx was the best. The 144 contacts were very good and not too much DX was worked. 15 mx on

The other hand was mostly dead but a very good opening on Saturday evening gave us the real DX contacts. At no period were we able to raise a contact on 10 m, and we were very sorry not to contact the Headquarters Scout Station in Montreal. VE3JAM 6 mhz carried a surprising amount of traffic (VK6 was worked 10m) while 2 mhz produced only one contact—a 4/4 effort over a five-mile path! We heard a lot more but the 522 went sick and was not repaired effectively in spite of some pretty intense effort on the part of all concerned.

Apart from the great amount of fun that was had by all, the Scouts themselves showed a great interest in the workings of Amateur Radio and expressed their appreciation of our efforts. We in our turn learned more about portable operation.

As for the feelings of the Scout Group, I think the following extract of a letter from Jim Mayfield, S.M. of the Kallangur Group, will clear this point—

"Many of the boys were not too keen at all to begin with, but it is a credit to the operators and the Amateur Radio movement generally that by the end of the day most of the Scouts were quite interested and indeed some were most enthusiastic about the whole venture and would have liked to go on all night. At this stage I would like to pay tribute to the Amateur Radio movement and to the Queensland Branch of the W.L.A. for the work and enthusiasm which they put into the Jamboree in order that it should be successful. To me, it was quite evident that a spirit of brotherhood and friendship exists in Amateur

The QSL cards provided by the Queensland Tourist Bureau will be on hand soon and Jack 4JF has been appointed distribution officer. These cards will be printed in three and will be available upon request. These cards were supplied and designed by the Tourist Bureau as being the most suitable for depicting Queensland overseas. Cards prevented the cards being printed in more than two colours, which ruled out the possibility of printing multi-coloured scenes of the State, reefs, etc. which would have been better received. The normal printed QSL information is on the card with space left for insertion of the individual Amateur call sign.

Also discussed at Council was the cost of sending a delegate to the next Federal Convention at Perth. There have been few agencies submitted to Council for this Convention so if you have not sent in that one you have been holding, do so now. The constitution is being reprinted and will be available free upon request. Clerical procedure is being improved within the Council which will mean a rapid reply to your correspondence. Steps are being taken to form a 'Listeners' Group and details will be supplied at a later date. There is a vacancy in the position of Class Manager so if you feel competent, let's have your name. The visit to Amberley Base was enjoyed by the 25 present and all voted it as an interesting experience.

We had a good attendance at our October general meeting, general business being quickly despatched to make way for an interesting lecture by Mr Harry Brown 4IA. He gave a very informative lecture showing that he really knew about 'Ionospheric Prediction' and how little we knew about the subject ourselves.

A discussion took place on the new frequency allocations and concern was expressed by some of the more experienced members on the present position. No matter how much a person has, continual removal of minor portions will surely waste him down to nothing. This is a democracy and our own personal views can only be brought before the governing body through our elected government representatives.

NORTH COAST ZONE

The mobileists to and from the Sunshine State are being either at their homes or very close to them. Meeting up with Sid 4EG ex-SEB was quite an occasion. His company would raise the depressed to high levels and his brief stay was very enjoyable. Eric 4KR is back in Queensland and we hope these notes are completed he will be back at home, while Jim 4KZ is approaching the border. Apparently all had most enjoyable trips and the friendliness of Hams on the air and in person added to the enjoyment of the holiday. The Queensland Radio Club are starting O.C.P. classes. May success attend their good work. 4WS has been in contact with 4ABZ—originally 0AABR. Being an old Queensland, 4ABZ is anxious to contact any VKs especially 4WR, 4WO and 4RJ.

★

Photo taken of Scout Group at Kallangur, just outside of Brisbane during the Jamboree of the Air Equipment lent by R. H. Cunningham P/L for the occasion. The arrangements and installation were made by Peter VK4FJ.



QUEENSLAND

Here in the Sunshine State, the Scout Jamboree of the Air was well supported by the active Amateurs and in doing so we received a lot of valuable publicity and goodwill. A State-wide coverage was obtained and due to the efforts of those participating I think the basic principles of Amateur Radio sown in the minds of today's youth will produce Hams of tomorrow.

Thanks goes to Peter 4PJ who arranged for our Governor and States Chief Scout, Sir Henry Ald Smith, to record a speech which was played over the air three times on Saturday and twice on Sunday. Peter also arranged the loan and installation of a Gelco Transmitter/Receiver for the Kallangur Scout Group. The individual Hams in Queensland were too numerous to mention, but the following are some who received local newspaper coverage.

In the South Coast area the Coolangubla Radio Club, 4AR, was having great fun. Also a portable tx and rx were installed in the den of Southport No. 1 Troop by the Southport Radio Club. Quite a number of Scouts attended there on Saturday and Sunday afternoons. Unfortunately, due to an oversight no operator was on duty on Sunday morning, but the Group found plenty of interest in logging stations heard on the BC348 in the den. The Scouts also paid visits to the shacks of Neal 4WW and also Bill 4WS.

In the Ipswich area, local Hams taking part were 4UC 4IB and 4AY. In Rockhampton our old friend and active participant in civic affairs, Frank 4FN, with R. Hobler, did a worth while job in establishing a station at Fitzroy Scout Headquarters. Our best wishes go to Frank who took sick on the Saturday night of the Jamboree and had to be assisted home. R. Hobler kept the station operating on the Sunday. Facilities of 4UX were extended to the Scouts of 4Y and Home Hill and from report many interesting contacts were made.

Radio which conforms to the ideals of Scouting.

The October Council meeting was held at Peter's (4PJ) QTH and those attending were 4PJ, 4CL, 4DC, 4RL, 52BZ, 4AO, 4JF, 4KB, 4VM, 4EF, 4AW and associate John Brimblecombe. There were four applications for membership. There has been a general move to streamline procedures for the Council and the following items are results of this move. Ballots for disposal equipment will be drawn at the Council meetings and this will ensure a rapid turnover of disposal gear. For this reason, all correspondence for disposal gear only should be marked 'Disposal' on the envelope. Also, the trustees and councillors have decided to dispose of some of the items held in the technical library. These items are ones that are seldom used and they will be disposed of by tender to the members.

SB60 COMPLETE S.S.B. TRANSMITTER



Featuring All-Band Operation with full Voice-Control facilities. Unit comprising AR55 S.S.B. Unit, Phasing Type Generator, modified Command V.F.O., frequency multiplier, 12B7V mixer, 5763 driver, pair 6146s Class AB1 P.A. Pi-coupled, 150 watts input on all bands.

Price £115 plus tax (12½%) Plus Valves

Power Supply available as an optional extra, £25 tax paid.

Any S.S.B., A.M. or associated equipment available to your own specifications

We extend to all Amateurs our best wishes for a Merry Xmas and a Prosperous New Year. May you achieve that DX contact in 1962!

AMATEUR RADIO SERVICE

605 ABERCORN STREET, ALBURY, N.S.W. Phone 1695

CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

DOW-KEY CO-AXIAL RELAYS

4 VERSATILE MODELS, A.C. OR D.C.

(Also Now Available with Type C, FNC, BNC, N and UHF Connectors)

DK60 SERIES

★ UNCONDITIONAL GUARANTEE for one year (We will repair if faulty within one year.)

R.F. SPECIFICATIONS:

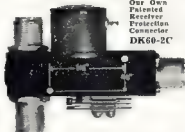
Low V & W.R. Less than 115 μ from 0 to 500 Mc. Low Losses Pure silver contacts. All other parts used in crucial positions are plated with fine silver. Gold plating available at extra cost special order. Low Cross-Talk greater than 80 db. in DK60-G and DK60-G2C through the use of a patented isolated connector arrangement which opens the disconnected conductor and simultaneously provides an electrostatic shield between it and the rest of the circuit. High Power Rating (as One kilowatt through straight connector) up to 10 watts through "isolated connector" especially for video switching. Single Pole Double Throw. Rf Contacts Rf leakage—extremely low, below leakage of typical rf connectors. A wide variety of connectors available. Example: UHF, BNC, and others in both straight and "isolated" models.

MECHANICAL SPECIFICATIONS:

High Contact Pressure. Long-life expectancy greater than one million operations—Continuous Duty. Teflon feed-through terminals used on coil to provide connection ease. Small, Compact only 2 1/2" x 3 1/2" x 1 1/2" inch. Light weight less than 8 ounces. Dow designed UHF (standard) or type N (slight additional cost) rf connectors available. Specify if type N connector.

ELECTRICAL SPECIFICATIONS:

Wide variety of coil voltages 6, 12, 24, 32, 48, 110, 220 D.C. volts at 2.0 watts 6, 12, 24, 110, 220 A.C. volts at 6 volt-amps 50-60 c.p.s. (Special voltage or resistance available on request. Less than 50°C temperature rise above ambient maximum operating temperature is 100°C except on special order. Auxiliary contacts available for power control. D.p.d.t. at 50-110v a.c. on DK60-2C and DK60-G2C.



STANDARD RELAYS INCLUDE

DK60—S.p.d.t. rf switch

DK60-G S.p.d.t. rf switch with special "isolated" connector in de-energised position

DK60-2C S.p.d.t. rf switch with d.p.d.t. auxiliary contacts

DK60-G2C—S.p.d.t. rf switch with d.p.d.t. auxiliary contacts and special isolated connector in de-energised position

Other combinations available on request. Rf relays built to specifications.



DK60-G2C



DK60



DK60-G

Weather proof model available for exterior installation.

Sole Australian Representative:

W.F.S. ELECTRONIC SUPPLIES CO.

225-7 VICTORIA ROAD, RYDALMERE, N.S.W. Phone 08-1715

Sole Victorian Agent: ELECTRONIC SERVICES, DOUGLAS STREET, NOBLE PARK, VICTORIA. Phone 746-8446
Sole South Australian Agent: TELEVISION & RADIOTRONIC CO., 11A GAYS ARCADE, ADELAIDE
Sole Queensland Agent: GENERAL IMPORT DIST., 135 LUTZOW STREET, WELLERS HILL, BRISBANE.

IT'S NEW!

"VHF FOR THE RADIO AMATEUR"

by FRANK C. JONES

Price 42/- plus 1/6 postage

The latest and most complete material on VHF. Hundreds of diagrams illustrating Radio Propagation, Antennae, Transmitters, Modulation, Power Supplies, Converters, Receiver IF systems, Pre-amplifiers, Test Equipment, etc. Whatever your interest, you can be sure that it will be completely covered in "VHF FOR THE RADIO AMATEUR".

Every Amateur will want one for his shack!

We predict it will be a quick sell-out!

ORDER YOUR COPY NOW!

McGILL'S AUTHORISED NEWSAGENCY

"Established a Century"

183-185 ELIZABETH STREET, MELBOURNE, C.1, VIC.

"The Post Office is opposite"

Phones: MY 1475-6-7

at the wedding joining in the ear-bashing of the Amateurs present. Nice to have met you Harford. And so say all of us.

Leo SGJ has been busy at his vocation but has managed to get the s.a.b. going and is quite happy to report his first contact using some 10 watts to his ex-citer. He has a tower and 15 ft. antenna. He is in the centre of the quad about 70 feet off the ground. His three element yagi is still used on 14 Mc. A very busy month and he will be in the profession at the moment, but is giving thought to 80 mc and the building of gear for that band. Eric SKU is busy getting his portable gear together from a desire to learn more about the art. He has promised to let all interested know when the Adelaide and Melbourne T.V. signals start coming in and then they will all make a rush for their 1 m.x rx's. How low can they get in the Mount area? Claude OCH has gone somewhat into smoke this month and cannot make a statement. He is sure to be that he is busy at his vocation, that he is in the throes of building some gear, that he is in the VCA buying all the available distance gear, or that he is just having a temporary rest from Radio. Your guess is as good as mine. Col SCJ is keeping cards on 7 Mc. as I well know, waiting for the day when he can get on the air. He almost lost his voice from shock, and is also very busy preparing his v.h.f. gear for the coming season. Dale ASB, who has been in the Mount Gambier T.V. set for his ticket on October 17 and is now eagerly awaiting the results. He and the news is good Dale.

Talking about the S.E. area, Fred ASO asked me to hope that he appreciated the many kindnesses shown to his XYL and himself whilst on their honeymoon. He tells me that he is extremely grateful to the ladies who waited there, and the hospitality from the gang had to be experienced to be appreciated. Fred ASO is going to be using a tape recorder to help with his language studies. According to my spy, Fred will soon be bilingual, and after looking it up in the dictionary, I was bit dumb about that one. I look upon Fred with some awe. Language study, whacks, it is a pity that you did not see the last of the Tom STL summer. His finger in the door, you would have heard language, and how!

Incidentally, Tom STL was down in the city recently, but unfortunately was unable to attend at the funeral of his father. We extend our sympathies Tom. By the way, that was a nice sort of an act to put on to him. You contacted me on 7 Mc. the other day. People will think that I never am on the air. A nasturtion on my character, that's what it was. Anyway, keep your ears open on that band in the future, it's marvellous what you hear on that band when you have not got a gun!

Speaking about the S.E. area, I told me that SKS, christian name unknown, is demitted in the Renmark area and will soon be bobbing up on the bands. He borrowed a stack of "A1" from the Tom STL summer. His things, so it won't be long before he joins the army of my detractors.

Barged into a day table hook-up on 7 Mc. to cut the day table, to remind my espionage agents to put on their false beards and black cloaks and deliver the goods, and thereupon the news of the day table hook-up was spread. If it had not been for Pets SFM jumping into the breach and bringing Tom STL, Sue SGP, Col SCJ, New SWW and myself into the scene, I think that the day table would have been a square one with five legs. My apologies gentlemen, but I am a stickler for the law, and all the flattering remarks about my rudeness will get you no where.

In SQX, by the time that this is being read, I will have taken up my abode at Woomea for an undisclosed period. This means of course that his association with the VKS Council must come to an end. I am sure that the Council will be in contradiction that the Council has lost a keen and sincere worker and we all hope that should be one day return to the city of Elizabeth, he will stay give us all a treat.

LOW NOISE XTAL CONVS. 144 Mc.
Repairs to and construction of Receivers, Transmitters and Test Equipment.
T.V. alignment.

ECCLESTON ELECTRONICS
146a Cotham Road, Kew, Vic. WY 3777

Council again. I really should not say all this because he was one of those dastards who assisted to hold me up to ridicule at the last Christmas meeting. I have had lots of fun with him, or no dastard. For you evil minded folk, a dastard is one who commits a dastardly deed and it that was not a dastardly deed, what? My national exposure was on 14 Mc. to light this month with the true story as to how Luke SLL acquired his now famous tower. It appears that Brian SZBH of Matland, and Luke SLL to a tower that was available over that way and hurriedly mustering the Admiral SZAH and Alan SZC, he set forth for Matland. Arriving at their destination, Luke immediately appointed himself as works manager, found the shaded tree, and at once fell off to sleep, only the winking of an eye later, Luke had been dismantled and tied on to the truck. Both of his slaves worked their fingers to the elbows, were both refused a tea break by Luke because as he cunningly put it, there was not any tea, and now both refer to Luke as Simon Legree, and there is no mistaking the underlying tone of bitterness and scorn as they mention his name. Man's inhumanity to Man!

On the trip home from Matland, Alan SZC fell asleep. Luke knew that at the place where Alan signed the time sheet, he could not warn of a fault, and with this in view he dug one up and gave a loud blast on two. Alan awoke at top speed, and twice through the car roof and through the wind shield, and it took the gang about ten minutes to unwrap his legs from around his neck. Again I say, Man's inhumanity to Man!

I put up a new aerial this month and if it had not been for Col Stevens, one of the associates, who, unfortunately dropped in at the right time, I don't think I would have finished it. No doubt about it, I am getting old. We only made one mistake, one of us tied the Man, who was to be the dog, and she went, looked quite cute dangling from the pulley. I suggested to Col, that I would go inside and get my mother-in-law to mount her broomstick and by up there and cut it loose. He thought it was terribly funny until he saw me go white as my XYL came out and heard his mother-in-law being carried off. I was being escorted to the laundry. Apparently he knew where the dog kennel was kept!

Well, Ye Ed, has his red pencil poised, so before we can use it, will say on behalf of the VKS Council and the members of the Division, "A Merry Xmas to all Divisions, both Council and membership, and may you all get the most of the season. I have been told that I have quarrelled all the year, I hope that we quarrel all next year, and if I have said anything that has caused you any trouble, I am glad to hear of it. T2, SPB (I don't go to you!).

TASMANIA

The Jamboree of the Air has passed for this year and it can be truly said that congestion on the bands was worse than during an R.D. Contest, due to the fact of course that contacts were of longer duration. Many VKY stations took part this year, but few contacts outside Australia were made. On the other hand, many good contacts were made and the Scouts had a great time as well.

Charlie 7KS was mobile marine with the Sea Scouts and Jack T2B went into camp with the Scouts and the Scouts had a great time. The base station at the 13th Hobart Scout Rq. and did an excellent job there indeed. It is possible to thank each station individually for help, but that would be too long, so you one and all on your excellent job.

The VK-ZL Contest has also passed, and conditions were not too good. The VK-ZL 21 Mc. band did produce some very good contacts however and those stations who took part were well rewarded for their trouble. As some quite nice DX contacts in the Pacific area was to be worked. Conditions during the "CQ" phone contest were deplorably bad and virtually no contacts were made from Southern Tasmania.

T.V.I. has reared its ugly head for the first time in Southern Tasmania and a T.V.I. Committee has been formed. As we all wish that committee the best of good fortune in its delicate but important work.

Remind to the S.E. area, that on Sunday, 10th December, This function will be our Christmas Get-together, so all XYLA, YLA, and harmonics are most welcome. Bring along your robbin gear, both transmitter and receiving, and find, and be in the fun too. Watch the Bulletin for full details.

We welcomed the S.E.-TCM back from the States at the November Divisional meeting and we confidently expect a most interesting address from him before he returns to M.I.T. Ted T2J delivered the lecture on the technique of meeting, the subject being "Getting on 2 Mx

Cheaply". As a result of his lecture, some new call signs can be expected on that band. Speaking personally, I thank Barney T2AK for lending me his notes. I have had lots of fun talking to the boys on 144 Mc.

With best wishes to all readers for Christmas 1961, from Ian T2Z.

HAMADS

Minimum 5/-, for thirty words.

Extra words, 2d. each.
Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received at the Editor's Office, East Mithras, C.S. Vic., by 28th of the month, and remittance should accompany the advertisement. Call signs are now permitted in Hamads. Dealers' advertisements not accepted in this column.

FOR SALE: Complete station, late VK-3VA. R.C.A. AR88 receiver, £120; Transmitter, 100TH final, 6V6, 6N7, 600; exciter, 400 and 1,500 volt power supplies (866's), 12 meters, 1000; Transmitter 807, 813 and push-pull 807 finals, 4-tube exciter, twin exciter power supplies and 750v final supply, 10 meters, £35; Modulator, 830Bs to Trimax 100w. transformer, £25; RA34B 1150 heavy duty power supply, £15; Hammond 3.5 Mc. v.f.o., £4; Mobile modulator and generator, 6N7, 6P6 to p.p. 807s, £10; KP/C6 six metre converter, £7/10/0; S Niner with 14, 28 and 54 Mc. coils, £7/10/0; Bendix frequency meter with stabilised power supply, £45. VK3DS, G. B. Lance, 123 Webster Street, Balarat, Vic.

FOR SALE: Transmitters: 80, 40, 20, 150 watts (813) complete, 1 m.x 50w. (QQ06/40); 2 m.x 30w. (635); 2 m.x 100w. (635); 2 m.x 200w. (635); 2 m.x 400w. (635); 2 m.x 800w. (635); 2 m.x 1000w. (635); 2 m.x 1500w. (635); 2 m.x 2000w. (635); 2 m.x 3000w. (635); 2 m.x 4000w. (635); 2 m.x 5000w. (635); 2 m.x 6000w. (635); 2 m.x 7000w. (635); 2 m.x 8000w. (635); 2 m.x 9000w. (635); 2 m.x 10000w. (635); 2 m.x 11000w. (635); 2 m.x 12000w. (635); 2 m.x 13000w. (635); 2 m.x 14000w. (635); 2 m.x 15000w. (635); 2 m.x 16000w. (635); 2 m.x 17000w. (635); 2 m.x 18000w. (635); 2 m.x 19000w. (635); 2 m.x 20000w. (635); 2 m.x 21000w. (635); 2 m.x 22000w. (635); 2 m.x 23000w. (635); 2 m.x 24000w. (635); 2 m.x 25000w. (635); 2 m.x 26000w. (635); 2 m.x 27000w. (635); 2 m.x 28000w. (635); 2 m.x 29000w. (635); 2 m.x 30000w. (635); 2 m.x 31000w. (635); 2 m.x 32000w. (635); 2 m.x 33000w. (635); 2 m.x 34000w. (635); 2 m.x 35000w. (635); 2 m.x 36000w. (635); 2 m.x 37000w. (635); 2 m.x 38000w. (635); 2 m.x 39000w. (635); 2 m.x 40000w. (635); 2 m.x 41000w. (635); 2 m.x 42000w. (635); 2 m.x 43000w. (635); 2 m.x 44000w. (635); 2 m.x 45000w. (635); 2 m.x 46000w. (635); 2 m.x 47000w. (635); 2 m.x 48000w. (635); 2 m.x 49000w. (635); 2 m.x 50000w. (635); 2 m.x 51000w. (635); 2 m.x 52000w. (635); 2 m.x 53000w. (635); 2 m.x 54000w. (635); 2 m.x 55000w. (635); 2 m.x 56000w. (635); 2 m.x 57000w. (635); 2 m.x 58000w. (635); 2 m.x 59000w. (635); 2 m.x 60000w. (635); 2 m.x 61000w. (635); 2 m.x 62000w. (635); 2 m.x 63000w. (635); 2 m.x 64000w. (635); 2 m.x 65000w. (635); 2 m.x 66000w. (635); 2 m.x 67000w. (635); 2 m.x 68000w. (635); 2 m.x 69000w. (635); 2 m.x 70000w. (635); 2 m.x 71000w. (635); 2 m.x 72000w. (635); 2 m.x 73000w. (635); 2 m.x 74000w. (635); 2 m.x 75000w. (635); 2 m.x 76000w. (635); 2 m.x 77000w. (635); 2 m.x 78000w. (635); 2 m.x 79000w. (635); 2 m.x 80000w. (635); 2 m.x 81000w. (635); 2 m.x 82000w. (635); 2 m.x 83000w. (635); 2 m.x 84000w. (635); 2 m.x 85000w. (635); 2 m.x 86000w. (635); 2 m.x 87000w. (635); 2 m.x 88000w. (635); 2 m.x 89000w. (635); 2 m.x 90000w. (635); 2 m.x 91000w. (635); 2 m.x 92000w. (635); 2 m.x 93000w. (635); 2 m.x 94000w. (635); 2 m.x 95000w. (635); 2 m.x 96000w. (635); 2 m.x 97000w. (635); 2 m.x 98000w. (635); 2 m.x 99000w. (635); 2 m.x 100000w. (635); 2 m.x 101000w. (635); 2 m.x 102000w. (635); 2 m.x 103000w. (635); 2 m.x 104000w. (635); 2 m.x 105000w. (635); 2 m.x 106000w. (635); 2 m.x 107000w. (635); 2 m.x 108000w. (635); 2 m.x 109000w. (635); 2 m.x 110000w. (635); 2 m.x 111000w. (635); 2 m.x 112000w. (635); 2 m.x 113000w. (635); 2 m.x 114000w. (635); 2 m.x 115000w. (635); 2 m.x 116000w. (635); 2 m.x 117000w. (635); 2 m.x 118000w. (635); 2 m.x 119000w. (635); 2 m.x 120000w. (635); 2 m.x 121000w. (635); 2 m.x 122000w. (635); 2 m.x 123000w. (635); 2 m.x 124000w. (635); 2 m.x 125000w. (635); 2 m.x 126000w. (635); 2 m.x 127000w. (635); 2 m.x 128000w. (635); 2 m.x 129000w. (635); 2 m.x 130000w. (635); 2 m.x 131000w. (635); 2 m.x 132000w. (635); 2 m.x 133000w. (635); 2 m.x 134000w. (635); 2 m.x 135000w. (635); 2 m.x 136000w. (635); 2 m.x 137000w. (635); 2 m.x 138000w. (635); 2 m.x 139000w. (635); 2 m.x 140000w. (635); 2 m.x 141000w. (635); 2 m.x 142000w. (635); 2 m.x 143000w. (635); 2 m.x 144000w. (635); 2 m.x 145000w. (635); 2 m.x 146000w. (635); 2 m.x 147000w. (635); 2 m.x 148000w. (635); 2 m.x 149000w. (635); 2 m.x 150000w. (635); 2 m.x 151000w. (635); 2 m.x 152000w. (635); 2 m.x 153000w. (635); 2 m.x 154000w. (635); 2 m.x 155000w. (635); 2 m.x 156000w. (635); 2 m.x 157000w. (635); 2 m.x 158000w. (635); 2 m.x 159000w. (635); 2 m.x 160000w. (635); 2 m.x 161000w. (635); 2 m.x 162000w. (635); 2 m.x 163000w. (635); 2 m.x 164000w. (635); 2 m.x 165000w. (635); 2 m.x 166000w. (635); 2 m.x 167000w. (635); 2 m.x 168000w. (635); 2 m.x 169000w. (635); 2 m.x 170000w. (635); 2 m.x 171000w. (635); 2 m.x 172000w. (635); 2 m.x 173000w. (635); 2 m.x 174000w. (635); 2 m.x 175000w. (635); 2 m.x 176000w. (635); 2 m.x 177000w. (635); 2 m.x 178000w. (635); 2 m.x 179000w. (635); 2 m.x 180000w. (635); 2 m.x 181000w. (635); 2 m.x 182000w. (635); 2 m.x 183000w. (635); 2 m.x 184000w. (635); 2 m.x 185000w. (635); 2 m.x 186000w. (635); 2 m.x 187000w. (635); 2 m.x 188000w. (635); 2 m.x 189000w. (635); 2 m.x 190000w. (635); 2 m.x 191000w. (635); 2 m.x 192000w. (635); 2 m.x 193000w. (635); 2 m.x 194000w. (635); 2 m.x 195000w. (635); 2 m.x 196000w. (635); 2 m.x 197000w. (635); 2 m.x 198000w. (635); 2 m.x 199000w. (635); 2 m.x 200000w. (635); 2 m.x 201000w. (635); 2 m.x 202000w. (635); 2 m.x 203000w. (635); 2 m.x 204000w. (635); 2 m.x 205000w. (635); 2 m.x 206000w. (635); 2 m.x 207000w. (635); 2 m.x 208000w. (635); 2 m.x 209000w. (635); 2 m.x 210000w. (635); 2 m.x 211000w. (635); 2 m.x 212000w. (635); 2 m.x 213000w. (635); 2 m.x 214000w. (635); 2 m.x 215000w. (635); 2 m.x 216000w. (635); 2 m.x 217000w. (635); 2 m.x 218000w. (635); 2 m.x 219000w. (635); 2 m.x 220000w. (635); 2 m.x 221000w. (635); 2 m.x 222000w. (635); 2 m.x 223000w. (635); 2 m.x 224000w. (635); 2 m.x 225000w. (635); 2 m.x 226000w. (635); 2 m.x 227000w. (635); 2 m.x 228000w. (635); 2 m.x 229000w. (635); 2 m.x 230000w. (635); 2 m.x 231000w. (635); 2 m.x 232000w. (635); 2 m.x 233000w. (635); 2 m.x 234000w. (635); 2 m.x 235000w. (635); 2 m.x 236000w. (635); 2 m.x 237000w. (635); 2 m.x 238000w. (635); 2 m.x 239000w. (635); 2 m.x 240000w. (635); 2 m.x 241000w. (635); 2 m.x 242000w. (635); 2 m.x 243000w. (635); 2 m.x 244000w. (635); 2 m.x 245000w. (635); 2 m.x 246000w. (635); 2 m.x 247000w. (635); 2 m.x 248000w. (635); 2 m.x 249000w. (635); 2 m.x 250000w. (635); 2 m.x 251000w. (635); 2 m.x 252000w. (635); 2 m.x 253000w. (635); 2 m.x 254000w. (635); 2 m.x 255000w. (635); 2 m.x 256000w. (635); 2 m.x 257000w. (635); 2 m.x 258000w. (635); 2 m.x 259000w. (635); 2 m.x 260000w. (635); 2 m.x 261000w. (635); 2 m.x 262000w. (635); 2 m.x 263000w. (635); 2 m.x 264000w. (635); 2 m.x 265000w. (635); 2 m.x 266000w. (635); 2 m.x 267000w. (635); 2 m.x 268000w. (635); 2 m.x 269000w. (635); 2 m.x 270000w. (635); 2 m.x 271000w. (635); 2 m.x 272000w. (635); 2 m.x 273000w. (635); 2 m.x 274000w. (635); 2 m.x 275000w. (635); 2 m.x 276000w. (635); 2 m.x 277000w. (635); 2 m.x 278000w. (635); 2 m.x 279000w. (635); 2 m.x 280000w. (635); 2 m.x 281000w. (635); 2 m.x 282000w. (635); 2 m.x 283000w. (635); 2 m.x 284000w. (635); 2 m.x 285000w. (635); 2 m.x 286000w. (635); 2 m.x 287000w. (635); 2 m.x 288000w. (635); 2 m.x 289000w. (635); 2 m.x 290000w. (635); 2 m.x 291000w. (635); 2 m.x 292000w. (635); 2 m.x 293000w. (635); 2 m.x 294000w. (635); 2 m.x 295000w. (635); 2 m.x 296000w. (635); 2 m.x 297000w. (635); 2 m.x 298000w. (635); 2 m.x 299000w. (635); 2 m.x 300000w. (635); 2 m.x 301000w. (635); 2 m.x 302000w. (635); 2 m.x 303000w. (635); 2 m.x 304000w. (635); 2 m.x 305000w. (635); 2 m.x 306000w. (635); 2 m.x 307000w. (635); 2 m.x 308000w. (635); 2 m.x 309000w. (635); 2 m.x 310000w. (635); 2 m.x 311000w. (635); 2 m.x 312000w. (635); 2 m.x 313000w. (635); 2 m.x 314000w. (635); 2 m.x 315000w. (635); 2 m.x 316000w. (635); 2 m.x 317000w. (635); 2 m.x 318000w. (635); 2 m.x 319000w. (635); 2 m.x 320000w. (635); 2 m.x 321000w. (635); 2 m.x 322000w. (635); 2 m.x 323000w. (635); 2 m.x 324000w. (635); 2 m.x 325000w. (635); 2 m.x 326000w. (635); 2 m.x 327000w. (635); 2 m.x 328000w. (635); 2 m.x 329000w. (635); 2 m.x 330000w. (635); 2 m.x 331000w. (635); 2 m.x 332000w. (635); 2 m.x 333000w. (635); 2 m.x 334000w. (635); 2 m.x 335000w. (635); 2 m.x 336000w. (635); 2 m.x 337000w. (635); 2 m.x 338000w. (635); 2 m.x 339000w. (635); 2 m.x 340000w. (635); 2 m.x 341000w. (635); 2 m.x 342000w. (635); 2 m.x 343000w. (635); 2 m.x 344000w. (635); 2 m.x 345000w. (635); 2 m.x 346000w. (635); 2 m.x 347000w. (635); 2 m.x 348000w. (635); 2 m.x 349000w. (635); 2 m.x 350000w. (635); 2 m.x 351000w. (635); 2 m.x 352000w. (635); 2 m.x 353000w. (635); 2 m.x 354000w. (635); 2 m.x 355000w. (635); 2 m.x 356000w. (635); 2 m.x 357000w. (635); 2 m.x 358000w. (635); 2 m.x 359000w. (635); 2 m.x 360000w. (635); 2 m.x 361000w. (635); 2 m.x 362000w. (635); 2 m.x 363000w. (635); 2 m.x 364000w. (635); 2 m.x 365000w. (635); 2 m.x 366000w. (635); 2 m.x 367000w. (635); 2 m.x 368000w. (635); 2 m.x 369000w. (635); 2 m.x 370000w. (635); 2 m.x 371000w. (635); 2 m.x 372000w. (635); 2 m.x 373000w. (635); 2 m.x 374000w. (635); 2 m.x 375000w. (635); 2 m.x 376000w. (635); 2 m.x 377000w. (635); 2 m.x 378000w. (635); 2 m.x 379000w. (635); 2 m.x 380000w. (635); 2 m.x 381000w. (635); 2 m.x 382000w. (635); 2 m.x 383000w. (635); 2 m.x 384000w. (635); 2 m.x 385000w. (635); 2 m.x 386000w. (635); 2 m.x 387000w. (635); 2 m.x 388000w. (635); 2 m.x 389000w. (635); 2 m.x 390000w. (635); 2 m.x 391000w. (635); 2 m.x 392000w. (635); 2 m.x 393000w. (635); 2 m.x 394000w. (635); 2 m.x 395000w. (635); 2 m.x 396000w. (635); 2 m.x 397000w. (635); 2 m.x 398000w. (635); 2 m.x 399000w. (635); 2 m.x 400000w. (635); 2 m.x 401000w. (635); 2 m.x 402000w. (635); 2 m.x 403000w. (635); 2 m.x 404000w. (635); 2 m.x 405000w. (635); 2 m.x 406000w. (635); 2 m.x 407000w. (635); 2 m.x 408000w. (635); 2 m.x 409000w. (635); 2 m.x 410000w. (635); 2 m.x 411000w. (635); 2 m.x 412000w. (635); 2 m.x 413000w. (635); 2 m.x 414000w. (635); 2 m.x 415000w. (635); 2 m.x 416000w. (635); 2 m.x 417000w. (635); 2 m.x 418000w. (635); 2 m.x 419000w. (635); 2 m.x 420000w. (635); 2 m.x 421000w. (635); 2 m.x 422000w. (635); 2 m.x 423000w. (635); 2 m.x 424000w. (635); 2 m.x 425000w. (635); 2 m.x 426000w. (635); 2 m.x 427000w. (635); 2 m.x 428000w. (635); 2 m.x 429000w. (635); 2 m.x 430000w. (635); 2 m.x 431000w. (635); 2 m.x 432000w. (635); 2 m.x 433000w. (635); 2 m.x 434000w. (635); 2 m.x 435000w. (635); 2 m.x 436000w. (635); 2 m.x 437000w. (635); 2 m.x 438000w. (635); 2 m.x 439000w. (635); 2 m.x 440000w. (635); 2 m.x 441000w. (635); 2 m.x 442000w. (635); 2 m.x 443000w. (635); 2 m.x 444000w. (635); 2 m.x 445000w. (635); 2 m.x 446000w. (635); 2 m.x 447000w. (635); 2 m.x 448000w. (635); 2 m.x 449000w. (635); 2 m.x 450000w. (635); 2 m.x 451000w. (635); 2 m.x 452000w. (635); 2 m.x 453000w. (635); 2 m.x 454000w. (635); 2 m.x 455000w. (635); 2 m.x 456000w. (635); 2 m.x 457000w. (635); 2 m.x 458000w. (635); 2 m.x 459000w. (635); 2 m.x 460000w. (635); 2 m.x 461000w. (635); 2 m.x 462000w. (635); 2 m.x 463000w. (635); 2 m.x 464000w. (635); 2 m.x 465000w. (635); 2 m.x 466000w. (635); 2 m.x 467000w. (635); 2 m.x 468000w. (635); 2 m.x 469000w. (635); 2 m.x 470000w. (635); 2 m.x 471000w. (635); 2 m.x 472000w. (635); 2 m.x 473000w. (635); 2 m.x 474000w. (635); 2 m.x 475000w. (635); 2 m.x 476000w. (635); 2 m.x 477000w. (635); 2 m.x 478000w. (635); 2 m.x 479000w. (635); 2 m.x 480000w. (635); 2 m.x 481000w. (635); 2 m.x 482000w. (635); 2 m.x 483000w. (635); 2 m.x 484000w. (635); 2 m.x 485000w. (635); 2 m.x 486000w. (635); 2 m.x 487000w. (635); 2 m.x 488000w. (635); 2 m.x 489000w. (635); 2 m.x 490000w. (635); 2 m

INDEX TO VOLUME 29-1961

ANTENNAE

Antennasmach—	
Part 1	..... Sep. p.4
Part 2	..... Oct. p.7
How Important is S.W.R.?	..... Aug. p.5
Multiband Antennae	..... Jan. p.9
Simplified Skywire System	..... Feb. p.7
Some Antennides	..... Feb. p.11
"The Beer Bottle Vertical"	..... Dec. p.3
The Varney (G5RV) Multi-band Antenna	..... Nov. p.4

AUDIO AND MODULATORS

A.M. Without Splatter	..... Feb. p.3
Modulator Design With OC26 Transistors	..... May p.3
Modulator Design, Further Notes	..... Jun. p.4
Narrow Band F.M.	..... Sep. p.3
Reference Shift Modulator for Mobile	..... Oct. p.7
3 Kc. Cut-off Low Pass Filters	..... Jun. p.5

BOOK REVIEWS

"A Guide to Amateur Radio"	..... Mar. p.8
"A.R.L. Antenna Book"	..... Mar. p.8
"A to Z in Audio"	..... Jul. p.11
"Electronic Tips and Time-savers"	..... Oct. p.15
"Hi-Fi Amplifier Circuits"	..... Jan. p.11
"How to Use Grid Dip Osc."	..... Jul. p.11
"Industrial Electronic Apparatus"	..... Jan. p.11
"Introduction to the Cathode Ray Oscilloscope"	..... Jan. p.11
"Mobile Manual"	..... Jan. p.11
"Radio Amateur's Handbook"	..... Jul. p.11
"Radio Amateur Operator's Handbook"	..... Jan. p.11
"Silicon Rectifier Handbook"	..... Oct. p.15
"Surplus Radio Conversion Manual," Vol. 3	..... Mar. p.8
"The Surplus Handbook"	..... Nov. p.8
"Thyristors"	..... Jan. p.11
"Tube and Semiconductor Guide"	..... Jul. p.11
"V.h.f. for the Radio Amateur"	..... Nov. p.8

CONTEST RULES AND RESULTS

First All-Asian DX Contest	..... Jul. p.9
National Field Day Contest	..... Feb. p.8
N.F.D. Results, 1961	..... Jun. p.7
N.F.D. Contest, 1962 Rules	..... Dec. p.11
R.D. Contest, 1961 Results	..... Jul. p.8
R.D. Contest, 1961 Results	..... Dec. p.8
Ross Hull Memorial V.h.f. Contest Results, 1960-61	..... Jun. p.9
Amended Results	..... Aug. p.7
Ross Hull Memorial V.h.f. Contest 1961-62	..... Nov. p.5
VK-ZL Contest 1960 Results	..... Nov. p.7
VK-ZL DX Contest 1961	..... Aug. p.9
24th B.E.R.U. Contest	..... Feb. p.15
1960 "CQ" C.w. Results	..... Jul. p.9
1960 "CQ" Phone Results	..... Jun. p.5

HINTS AND KINKS

An Aid for Your Beam	..... Oct. p.8
Experiments with Command Receivers	..... Jan. p.9
Painless Mounting of Mobile Antenna	..... Oct. p.8
Portable 6 Metre Beam	..... Jan. p.9
Simple Hash By-pass	..... Jun. p.7
Some Ideas That Help	..... Jan. p.9
Supplementary A.g.c. System	..... Jan. p.9

INSTRUMENTS

A Frey Meter	..... Apr. p.3
Antennasmach, Part 1	..... Sep. p.4
Antennasmach, Part 2	..... Oct. p.4
Freq. Meter BC221 Bendix (SCR211 Aust.)	..... Jun. p.3
Freq. Meter SCR211	..... Jan. p.5
Freq. Meter SCR211, Technical Correspondence	..... Jun. p.3
Freq. Meter SCR211, Further Notes	..... Jul. p.7
Getting to Know the Oscilloscope, Part One	..... Dec. p.5

MISCELLANEOUS

Addresses of I.A.R.U. Member Societies	..... Feb. p.13
AFDR1 Receiver	..... Apr. p.11
Always Switch to Safety	..... Dec. p.7
Amateur Activity at Alice Springs 1961 Show	..... Jul. p.10
Amateur in Exile	..... May p.7
Amateurs Take Part in Operation Phoenix	..... Oct. p.13
Amateurs! You Can Assist to Publicise Your Hobby	..... Sep. p.3
Australian DX Century Club Award Rules	..... Jan. p.13
Aust. D.X.C.C. List of Countries	..... Jan. p.14
A VK's Comments of Other Countries and Their Hams	..... Feb. p.12
Awards Issued by N.Z.A.R.T. Commonwealth Technical Training Week	..... May p.7
F.S.K.—Trial Period on all Amateur Bands	..... Jun. p.9
Meet the Other Amateur, Vol. Molesworth, VK2VO	..... May p.9
Message from Hong Kong	..... Apr. p.9
N.F.D's. Can Be Run	..... Oct. p.11
N.F.D. 1961—VK6 Effort	..... Oct. p.11
North Coast and Tablelands N.S.W. Zone Convention	..... May p.10
Official V.H.F. Records in Australia	..... Nov. p.4
Phutle Phonetics	..... Apr. p.13
P.M.G. Announces Government Agreement to R.F.A. R.C. Recommendations	..... Nov. p.3
P.M.G.'s. Message to Amateurs	..... Jan. p.8
Qld. Div. Annual Convention at Nambour	..... Aug. p.15
Quarterly Exams, W.O.C.P. in Special Place for Amateur in National Defence	..... Sep. p.9
S.S.B. Activity in G Land	..... Feb. p.21
S.S.B. on 20 Metres	..... Nov. p.15
S.S.B.—46 Years Ago	..... Oct. p.17
The Elizabethan Award	..... Nov. p.9
Two-Way Radio Handed Over to Burnie Fire Brigade	..... Aug. p.8
V.H.F.—Present State of Art	..... Oct. p.8
VK3BH Calling	..... Feb. p.9
VK6VF—50 Mc. Beacon Tx	..... Aug. p.19
VK9 QSL Service	..... Feb. p.15
W.A.V.K.C.A. Award	..... Jan. p.13
W.I.A. D.X.C.C. Membership	..... Oct. p.19
W.I.A. Exhibit at Hobart	..... Dec. p.7
W.I.A. Federal President's Annual Report, 1960-61	..... Aug. p.12
6th Elizabethan Birthday Celebrations	..... Nov. p.9
11th Annual Convention of N.S.W. Div., W.I.A.	..... Mar. p.9

POWER SUPPLIES

D.C. Power Converter for Mobile	..... Oct. p.3
Final Power Supply	..... Apr. p.13

RECEIVERS

Method of Resolving D.S.B.	..... Jan. p.7
See You Up Two (Xtal Filters)	..... Aug. p.3
Xtal controlled Converter, 50 Mc., using 12 Volt H.T.	..... Jan. p.4
3 Kc. Cut-off Low Pass Filters	..... Jun. p.5
522/542A V.H.F. Equipment:	
Part 1	..... Feb. p.5
Part 2	..... Mar. p.5

SINGLE SIDEBAND

ARS5A Circuit	..... Jan. p.20
Further ARS5A Circuit	..... Apr. p.15
Electronic T-R Switch	..... Mar. p.12
Final Power Supply	..... Apr. p.15
See You Up Two (Xtal Filters)	..... Aug. p.3
Sideband for the Start	..... Apr. p.5
Two-Tube S.S.B. Phasing Rig	..... Jul. p.13
V.F.O. for 9 Mc. S.S.B.	..... Feb. p.5
Amendments	..... May p.7
VK2ON Transmitter—	
Part 1, V.F.O.	..... Jun. p.15
Part 2, Mixer and Control Circuits	..... Jul. p.13
Part 3, Audio Amp. and Modulator	..... Aug. p.11
Part 4, 9 Mc. Section	..... Sep. p.15
Part 5, Linear Amp.	..... Oct. p.17
Part 6, Linear Amp.	..... Dec. p.19

TECHNICAL MISCELLANEOUS

Know Your Capacity	..... Jul. p.3
Polarity Sensitive Impulse Switch	..... Feb. p.11
Simple Chassis Bending Tool	..... Jun. p.4
Simplified Method of Determining Transformer Ratios	..... Jan. p.3
Transistor Radios, Part 1	..... Aug. p.7

TRADE REVIEW

A. & R. Voltage Doubler Transformer	..... Apr. p.11
Dynamic Microphone	..... Apr. p.11
Glass Zeners in 400 mW. Rating	..... Oct. p.15
Knobs	..... Apr. p.11
Miniature Multimeters	..... Apr. p.11
New B. & K. Model 1076	..... Oct. p.15
Television Analyst	..... Apr. p.11
Plugs	..... Apr. p.11
Tape Decks	..... Apr. p.11
Viceroy S.S.B. Transmitter	..... Oct. p.15
Willis Airwound Inductances	..... Apr. p.11

TRANSMITTERS

A.M. Without Splatter	..... Feb. p.3
High Efficiency Plate Modulated Class C Amp.	..... Feb. p.7
Narrow Band F.M.	..... Jun. p.5
522/542A V.H.F. Equipment:	
Part 1	..... Feb. p.8
Part 2	..... Mar. p.5

V.F.O.'s

Franklin Oscillator	..... Oct. p.9
High Stability V.F.O.'s of Recent Design	..... Mar. p.2
V.F.O. at VK2ON	..... Jun. p.15
V.F.O. for 9 Mc. S.S.B., BC458 Conversion	..... Feb. p.5
Amendments	..... May p.7
72 Mc. V.F.O. for 144 Mc. Drive	..... May p.4

HAMADS

For this issue, please turn to Page 27

CRYSTALS ALL THESE FREQUENCIES £1 EACH

FT 3010	FT 4380	FT 4895	FT 5552.5	DC 5980	LP 6547.9	FT 7373.3
DC 3050	FT 4440	FT 4930	FT 5635	DC 6021.1	DC 6561.3	FT 7375
FT 3195	FT 4445	FT 5005.8	FT 5655	LP 6032	FT 6550	LP 7450
DC 3320	FT 4465	FT 5110	FT 5660	LP 6040	FT 6560	DC 7400
DC 3332.5	FT 4483	DC 5145	DC 5700	FT 6050	LP 6561	FT 7406.8
FT 3340	FT 4490	DC 5166.6	FT 5706	LP 6110	DC 6572.3	FT 7425
DC 3440	DC 4495	DC 5170	DC 5710	LP 6130	LP 6640	FT 7440
FT 3690	FT 4535	FT 5180	FT 5740	LP 6210	FT 6650	FT 7600
FT 3828	FT 4540	FT 5205	FT 5744	FT 6225	DC 6700	LP 7890
DC 3830	FT 4549	DC 5210	DC 5770	FT 6235	DC 6750	DC 7890
FT 3830	DC 4660	FT 5237.5	FT 5773.3	DC 6240	DC 6783.3	DC 7925
FT 3885	FT 4672.76	DC 5250	FT 5775	LP 6243.3	FT 6815	LP 7930
DC 3930	FT 4676	DC 5285	FT 5780	FT 6265	FT 6840	DC 7962.8
DC 3970	FT 4695	FT 5295	FT 5782	FT 6300	FT 6890	DC 7810
DC 3995	FT 4730	LP 5300	DC 5810	DC 6350	FT 6935	DC 8036.2
FT 4010	FT 4735	FT 5360	FT 5815	FT 6355	LP 7010	DC 8171.25
FT 4025	FT 4750	FT 5365	FT 5852.5	FT 6375	LP 7120	DC 8176.9
FT 4065	DC 4750	FT 5397	FT 5855	DC 6420	LP 7171	DC 8182.5
FT 4080	LP 4765	DC 5410	FT 5897.5	FT 6462.5	FT 7175	DC 8460.23
FT 4180	FT 4780	FT 5437	FT 5910	LP 6470	FT 7200	DC 8469.23
FT 4235	FT 4815	DC 5515	LP 5910	FT 6515	LP 7205	DC 8465.45
FT 4280	FT 4840	DC 5530	FT 5920	LP 6522.9	LP 7270	DC 8488
FT 4295	FT 4852	FT 5551.5	DC 5950	FT 6535	LP 7350	DC 8525
FT 4315	FT 4885			DC 7362.5	DC 8562.85	

CRYSTALS ALL THESE FREQUENCIES £2 EACH

3.5 Mc. Ham Band:	50 Mc. Ham Band:	144 Mc. Ham Band:	(continued):
DC 3515	FT 3555	DC 8333.3	= 50 Mc.
FT 3555	DC 3560	DC 8385.3	= 50.2 Mc.
FT 3586	DC 3562	DC 8400	= 50.4 Mc.
FT 3597	FT 3584	DC 8416	= 50.5 Mc.
FT 3534	FT 3573	DC 8450	= 50.7 Mc.
DC 3547	FT 3575	DC 8483	= 50.9 Mc.
FT 3549	FT 3580	DC 8500	= 51 Mc.
FT 3552	FT 3587		
DC 3552	FT 3595		
7 Mc. Ham Band:	144 Mc. Ham Band:		
Crystals of any frequency, £2.	DC 8900	DC 8014	DC 8020.5
	DC 8010	DC 8014.5	DC 8021
	DC 8013	DC 8015	DC 8021.5
	DC 8013.5	DC 8015.5	DC 8022
			DC 8029

SAKURA CIRCUIT TESTER Model TR-68

Sensitivity: d.c. 20,000 ohms/volt, a.c. 10,000 ohms/volt. Ranges—d.c. volts: 6, 30, 120, 600, 1,200v; a.c. volts: 6, 30, 120, 600, 1,200v. D.c. current: 60 μ A, 6 mA, 60 mA, 600 mA. Resistance: 10K, 100K, 1M, 10M ohms. Capacitance: 0.001-0.2 μ F, 0.0001-0.01 μ F. Inductance: 30, 3,000H. Decibels: -20 to +17 db. (0 db.—0.775V—600 ohms). Dimensions: 4 1/2" x 6 1/2" x 2 1/2". Weight: 1.3 lbs. Price £9/10/0 inc. tax.

VALVE SOCKETS

7-pin Miniature Valve Sockets and Shields, New. 15 for £1.
9-pin Valve Sockets, McMurdo, 9d. ea.
Octal Valve Sockets 1/6 each

ECKO NO. 88 TRANSCEIVER

Portable, xtal locked 4 channel, 40 to 43 Mc., 14 valves, 1L4, 1T4, 3A4, etc., 12v. 3a. input power supply. Less crystals, mike and headphones, etc.

To Clear, £6/10/0 each

BELDEN RUBBER COV. FLEX

Single, 1/32 inch synthetic insulation. 1,000 ft. reel, 50/-. Weight approx. 5 lb.

GENEMOTORS

Command Receiver Genemotors, 28v. input, 250v. 60 mA. output, new, 25/-

V.H.F. RECEIVERS

Type R89/ARN-5A. 300 Mc. Valves: seven 6AJ5s, two 12SN7s, one 12SR7, one 28D7, six relays, and three crystals of 6322.9 Kc. As new. £3 each.

MULTIMETER Model 200H

20,000 ohms per v. d.c. 10,000 ohms per v. a.c.



Specifications:
D.c. volts: 0-5, 25, 50, 250, 500, 1,500.
A.c. volts: 0-10, 50, 100, 500, 1,000.
D.c. current: 0-50 μ A; 25, 250 mA.
Resistance: 0-80K ohms; 0-6 meg.
Capacity: 0.01-0.3 μ F, int. a.c. 5v.; 0.0001-0.01 μ F, int. a.c. 250v.;
Decibels: minus 28 db. plus 22 db.
Output range 0-10, 30, 100, 500, and 1,000.
Battery used: UM3 1.5v. 1 piece.
Dimensions: 3 1/4 x 4 1/4 x 1-1/8 in.

Complete with internal battery, testing leads and probe.

Price £5/17/6 inc. tax.

1155 GENEMOTORS TYPE 34A

Input 93v., output 225v. at 110 mA. Complete with relays and filters, in case. Weight 30 lbs. 19/6 each. 5/- handling charge.

RECORDING TAPE

TMK "Syncrotype" 7" Rolls, PL-12 (Standard) £1/16/6
TMK "Syncrotype" 7" Rolls AC-18 (Long Play) £2/10/6

AMERICAN POTENTIOMETERS

American Bradley, 2" long, 1" shaft, 1" diam. Available in following sizes: 20,000, 25,000, 30,000, 50,000, 100,000, 250,000 ohms, 1 and 2 megohms.

Price 2/6 each.

SPECIALS!!

SPECIALS!!

High or Low Imp. Headphones, 12/6 pr.
U.S.A. Ampenol Coaxial Cables, 5/- ea.
Morse Key and Buzzer Sets, new, 12/6
SCR522 28v. Genemotor power supply, 20/-, 5/- packing fee.
English Filter Chokes, 40 mA., 100 ohm resistance 3/6 each
Carbon Mike Transformers, small, new, 5/- each
Vibrators, Oak/M.S.P. 6v. synchronous 7-pin AV5211R £1 each

HOOK-UP WIRE

P.V.C. insulation, 0.028. Red or white. 100 yd. Rolls, 19/- Roll.

8 Mc. MINIATURE CRYSTALS

Band-edge market. Miniature Crystal and socket, £2.

We have stocks of the latest—

CALL BOOKS AND LOG BOOKS

HAM RADIO SUPPLIERS

5A MELVILLE STREET, HAWTHORN, VICTORIA

Phone 86-6465

Money Orders and Postal Notes payable Nth. Hawthorn P.O. 5/- Packing Charge



*Season's
Greetings*

THE MANAGEMENT AND STAFF
OF AWV TAKE THIS OPPORTUNITY
TO EXTEND TO THEIR
MANY CLIENTS AND FRIENDS
THE SINCEREST OF BEST
WISHES FOR A
MERRY CHRISTMAS AND
A PROSPEROUS NEW YEAR

AMALGAMATED WIRELESS VALVE CO. PTY. LTD., SYDNEY • MELBOURNE • BRISBANE